Pre-service Secondary Teachers' Attitudes Towards Inclusive Education

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Abstract: The attitudes held by pre-service teachers have been shown to affect their willingness and ability to implement an inclusive approach to education. A sample consisting of 193 pre-service secondary teachers enrolled in secondary education courses at an Australian university were surveyed to determine their attitudes towards inclusive education, with a particular focus on attitudinal changes across the years of study. Results indicated that pre-service secondary teachers held positive attitudes towards inclusive education; however there was a significant decline in positive attitudes through the years of study. Pre-service secondary teachers enrolled in postgraduate programs were more inclusive than those enrolled in undergraduate courses. Attitudes towards training and perceived competence were less positive than other attitude scales for all participants, suggesting a concern regarding training effectiveness. Replication of the study is recommended across additional Australian and international universities to determine differences in training content and experiences which may impact on attitudes towards training and perceived competence.

Teachers play a fundamental role in implementing an open and inclusive environment for all children in the classroom. Secondary education teachers have been described as less positive towards inclusive education than teachers of younger children (Mastropieri & Scruggs, 2001; Ross-Hill, 2009). It has been suggested that this may be attributed to a results-centred pedagogy in secondary schools, rather than the child-centred pedagogy more commonly found in primary and preschools (Nind & Wearmouth, 2006; Pearce & Forlin, 2005). As teachers-in-training, it is essential that pre-service secondary teachers maintain a positive attitude towards inclusive education in secondary schools. Bandura (1986) suggested that individuals pursue activities and situations where they feel competent, and it follows that positive attitudes are associated with feelings of competency through training (Jung, 2007). For pre-service teachers, self-efficacy, or the belief in one's ability to be successful, has been demonstrated to improve with specific training for inclusive education (Leyser, Zeiger, & Romi, 2011). This study will consider the attitudes of pre-service secondary teachers towards inclusive education, with a particular interest in attitudinal changes across the years of study, and the impact of training for inclusion.

Education in Australia has undergone many changes over the last century. During the period of the 1940s to 1970s, many special schools were established to provide education for children with disabilities (Forlin, 2006). During that period, education in a mainstream school was not available to children with disabilities, leaving education in a segregated special school the only option for children with special education needs, other than nonattendance (Thomazet, 2009).

Through the 1970s to the early 1990s, a gradual change in policies led to the establishment of special education units within the confines of mainstream schools, and the opportunity for children with disabilities to be involved in mainstream classes (Disability Services Australia, 2011). The practice in this period became known as integration, with a focus on the geographical location of where the education was provided rather than a focus on providing an inclusive education for all children (Thomazet, 2009). Another change that developed throughout this period was a growing interest towards the possibility of educating children with special needs in mainstream classrooms (Zigmond, Kloo, & Volonino, 2009). A significant policy change occurred with the introduction of the Disability Discrimination Act (Commonwealth Government, 1992) which made it illegal for Australian schools to refuse admission to any child on the basis of disability excepting where unjustifiable hardship could be demonstrated by the school.

The first international movements toward a more inclusive approach to education occurred in the United States and Italy (Cornoldi, Terreni, Scruggs, & Mastropieri, 1998). In 1994, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) conducted a conference in Salamanca, Spain, to discuss access and equality in special needs education (UNESCO, 1994). A key principle in the Salamanca Statement and Framework for Action, of which Australia was a signatory, was the concept that inclusion should not be limited to only children with special education needs, and should consider all individual differences.

Avramidis and Norwich (2002) described inclusive education as the process of restructuring mainstream schools with the aim of all schools to be able to accommodate all children, regardless of disability or special education needs. Several researchers have suggested that the concept of inclusive education is more involved than providing education for all children within the classroom, and is related to the much larger concept of social inclusion and valued status for all people in society irrespective of differences or disability (Forbes, 2007; Forlin, 2006; Mastropieri & Scruggs, 2001; Thomazet, 2009; Zoniou-Sideri & Vlachou, 2006). It has also been suggested that an inclusive approach to education is beneficial for all children, and the rewards of an inclusive environment are not limited to children with special education needs (Nind & Wearmouth, 2006).

Teacher attitudes have been found to be highly related to successful inclusive education (Avramidis & Norwich, 2002). Teachers who hold positive and open attitudes towards creating an environment of inclusion for all students in the classroom, irrespective of differences or disabilities, were found to have been more successful in implementing inclusive practices (Avramidis, Bayliss, & Burden, 2000). Research by Pearce (2009a, 2009b) suggested that maintaining a positive attitude towards inclusive education was even more important than either knowledge or skills. This was supported in a review conducted by Boyle, Scriven, Durning and Downes (2011), who added that a positive attitude towards inclusive education was even more important than school resourcing, as it was the teacher who had to implement the inclusive practices. Pearce (2009a) also highlighted the importance of pre-service teacher training, noting that more positive attitudes were held by those teachers who had been prepared in their pre-service teacher training to teach all children, compared with those that had not been prepared and trained to teach a diverse classroom.

Several studies have considered teachers' attitudinal changes towards inclusive education over years of experience (Forlin, 1995; Leyser, Kapperman, & Keller, 1994). Generally, teachers with more experience indicated less positive attitudes towards inclusive education. Boyle, Topping, and Jindal-Snape (In Press) surveyed the attitudes of secondary teachers and found that while attitudes towards inclusion were positive, there was a significant decline in positive attitudes after the first year of teaching. Professional

competency has been identified as an area of significant concern for teachers tasked to implement inclusive education (Forlin, Keen, & Barrett, 2008). For improvement in attitudes towards inclusive education to occur, it has been suggested that ongoing professional training for existing teachers is necessary, as well as further development in pre-service teacher training for more inclusive practices (Forlin, 2010b).

A study by Lambe and Bones (2006) found that attitudes of pre-service teachers towards the philosophy of inclusive education were generally positive, with more than 80% of participants believing that all teachers should experience teaching children with special education needs. However there was a marked concern about training and preparation. Specifically, almost half of the participants felt that they did not have adequate experience to work effectively with students with special education needs, and more than half felt that they did not have the skills to teach in an inclusive setting. The attitudes of pre-service teachers towards inclusive education have been shown to be a significant predictor for future implementation of inclusive education (Sze, 2009). All of the studies reviewed by Sze considered pre-service teachers as a single cohort, without any consideration for changes that may occur across the years of study.

Pre-service teacher training for inclusive education has been shown to be an effective method for improving attitudes towards inclusive education (Forlin, 2010a). A study conducted by Loreman, Forlin and Sharma (2007) into attitudes before and after training for inclusive education found that training was successful in improving attitudes. Further research compared methods of training between several Australian and international universities was unable to determine whether a specific training module was more effective at improving attitudes and knowledge about inclusive education than an infusion approach, which incorporated elements of inclusive education into several modules (Sharma, Forlin, & Loreman, 2008). Not all researchers agree that attitudes towards inclusive education are improved through training. Hastings and Oakford (2003) found that training was not a significant factor for attitudes towards inclusive education, and that attitudes were determined by types of disabilities, with less inclusive attitudes held towards children with behavioural and emotional difficulties than those with learning disabilities. A limitation to categorising disabilities in this manner was that many pre-service teachers may not have had any personal experiences or specific training with children in either or both categories, and attitudes may be indicative of stereotypes in the absence of personal experience or specific training. A recent study by Forlin and Chambers (2011) found that while attitudes towards inclusive education were improved through training and knowledge, pre-service teachers' concerns and perceived stress about the implementation of inclusive education were not improved.

The aim of the current study was to investigate the attitudes of pre-service secondary teachers towards inclusive education through the years of study, and to determine the effects of training for inclusive education. This study was completed as an element of a larger project, which considered early childhood and primary pre-service teachers in addition to secondary pre-service teachers. The complete data set for all pre-service teachers was utilised for the purposes of identifying grouped variables in the survey tool.

It was hypothesised that pre-service secondary teachers' attitudes towards inclusive education would change over the years of study. Specifically, it was expected that as pre-service teachers undertake study and training for inclusive education, scores on a measure of attitudes towards inclusive education would improve, and pre-service teachers at a third or fourth year of study would be more positive towards inclusive education than those pre-service teachers in the first or second year of study.

It was hypothesised that effective training in inclusive education would be reflected in an increased ability to define inclusive education. As pre-service teachers progress through their years of study, it would be expected that their understanding of and ability to

define inclusion would improve, and that an improved ability to define inclusion would also result in more positive scores on a measure of attitudes towards inclusive education.

Method
Participants

The participants of this study consisted of 193 pre-service secondary teachers. There were 19 participants enrolled in a postgraduate program and a total of 174 participants enrolled in their first year (58), second year (39), third year (68) and fourth year (9) of undergraduate training. Pre-service secondary teachers enrolled in a postgraduate training program had previously completed an undergraduate degree in a non-education related area and were enrolled in the one year full time (or two years part time) course to gain professional registration. Pre-service secondary teachers enrolled in an undergraduate training program were enrolled in a double degree program, with one degree consisting of the area of specialism and one degree consisting of the education training. The sample consisted of 61 males and 132 females, with ages ranging from 18 to 58 years, and a mean age of 21.51 years ($SD = 4.41$). The sample included 43% of participants ($n = 83$) who identified as having studied a module or unit on inclusive education.

Self-report surveys can be vulnerable to responses biased towards more socially desirable behaviours and attitudes (Fisher & Katz, 2000). To minimise the possibility of social desirability bias, and to preserve participant confidentiality, the survey was anonymised. This study conformed to the standards of ethical conduct for research involving humans (National Health and Medical Research Council, 2007) and was approved by the University Human Research Ethics Committee.

Materials

The Teacher Attitudes to Inclusion Scale (TAIS) was chosen as an appropriate measure of attitudes towards inclusive education. Developed by Boyle, Topping and Jindal-Snape (In Press) to measure the attitudes of qualified teachers towards inclusive education, the TAIS consisted of 27 questions and had been demonstrated to be a reliable measure of attitudes towards inclusive education, with a Cronbach's alpha of .89. Higher scores on the TAIS are indicative of more positive attitudes. The TAIS was developed following in consultation with previously published surveys by Van Reusen, Shoho and Barker (2000), Wilczenski (1995), Villa and Thousand (1996), and Avramidis, Bayliss and Burden (2000).

The TAIS was adapted for the purposes of administering to pre-service teachers, with six questions identified and deleted as being not applicable to pre-service teachers (compared to qualified teachers). Several other questions were modified to represent a pre-tense condition rather than a current tense, such as "has only" was modified to "will have only". This resulted in questions that were fundamentally unchanged except for the conditions appropriate to a pre-service teacher rather than a qualified teacher. An additional question was added to the adapted survey, which asked participants to provide a definition of inclusive education. The adapted TAIS for pre-service teachers will be referred to as the TAISA (Teacher Attitudes towards Inclusion Scale – Adapted) throughout this report.

The TAISA for pre-service teachers consisted of 21 scale questions, with seven questions reversed. Similar to the original survey, a six point Likert scale was used for all scale questions, with answers ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). An advantage of a six point scale was that participants have no option to choose a middle (or neutral) score, and in effect are required to either agree or disagree with each statement.

After adjustment of the reversed questions, the scores for each individual question were summed and averaged for each participant, resulting in a Total Inclusion Score (TIS). Higher scores are indicative of more positive attitudes, which was also consistent with the TAIS.

Procedure

The surveys were distributed around scheduled lecture periods towards the latter part of the first semester and early in second semester of the same year. The data for each cohort in the cross-sectional design was collected concurrently to minimise any impact of field placements or training modules. All data was analysed using the PASW Statistics GradPack software (more commonly known as the Statistical Package for Social Scientists, or SPSS, version 18). The data demonstrated a normal distribution, and while there were several outliers, this was to be expected in a reasonably large sample (Pallant, 2011).

The final question in the survey was the previously mentioned definition of inclusive education. To assist with quantitative interpretation of this qualitative question, answers were categorised as follows:

- No definition given
- Did not define integration or inclusion
- Defined integration rather than inclusion
- Basic definition of inclusion
- Advanced definition of inclusion

The definitions of inclusion were measured against the following definition by Zoniou-Sideri and Vlachou (2006):

> "Inclusion and inclusive education are concerned with the quest for equity, social justice, participation, and the removal of all forms of exclusionary assumptions and practices. It is based on a positive view of difference and has at its heart the principle that all pupils, including those who are 'different', are considered to be valued and respected members of the school community" (p. 379).

This definition had previously been included on the TAIS as an example; however it was removed in the TAISA to explore the participants' understanding of the concept of inclusive education. The first two categories need no further explanation; integration has been described earlier as focussed on a place, rather than a process of inclusion; and the basic and advanced understanding differed by describing one, or more than one respectively, of the concepts introduced by Zoniou-Sideri and Vlachou (2006). Table 1 provides an example of a definition provided by participants for each category.

Category	Definition
Neither	"The student must be able to handle the situation." "Ability for all students to be involved with their decision in learning." "Allowing children of all abilities to be taught in mainstream schools if it is appropriate and helpful for the parties involved."
Integration	"Placing disabled students in mainstream classes." "Including students with special needs to be integrated into the mainstream classroom." "All students attend the classroom for a full day, incorporated with other students."
Basic	"Including all children in the classroom activities regardless of their learning abilities." "Where every student is involved in the classroom, irrespective of ability, skill, handicap or age." "Catering for all students within the classroom regardless of their intellectual ability or their mental/physical health."
Advanced	"Inclusive education means that all students irrespective of age, gender, intellectual or physical disability; should have equal access to the education system and be able to be included in a mainstream education setting." "Education that provides for and promotes participation for students with any level of ability. Inclusive education needs to be supported by extra assistance, and a culture of compassion and understanding."

Note. Neither = did not define either integration or inclusion, Integration = defined integration rather than inclusion, Basic = basic definition of inclusion, Advanced = advanced definition of inclusion.

Table 1: Examples of definitions of inclusion by category

Results

The 21 items that comprise the TAISA for pre-service teachers were subjected to principal components analysis with Varimax rotation. Parallel Analysis (Watkins, 2000) provided support for a three component solution, which explained a total of 40.27% of the variance. The three components were labelled Positive Affect (PA), Training and Perceived Competence (TAPC), and Negative Affect (NA), which reflected the content of the items underlying each component. Affect refers to the experience of engagement and emotion. There is extensive research across a variety of fields supporting the use of positive and negative affect scales as distinct dimensions (Watson,Clark, & Tellegenref, 1988; Crawford & Henry, 2004) and provides support for the retention of the separate components. A Total Inclusion Score (TIS) was also calculated. Internal reliability was calculated for each scale using Cronbach's alpha, and was acceptable for PA (.79) and TAPC (.70), slightly low for NA (.67) and good for TIS (.81). Each participant's score for the components was calculated by averaging the sum of all items, to maintain the scale consistency of scores from 1 to 6. Table 2 describes the rotated component loadings for the three component solution.

| Question | Component | | | |
	PA	TAPC	NA	Communalities
Q17. Participate	**.723**	.078	.150	.551
Q15. Alternative	**.647**	.086	.093	.435
Q18. Same class	**.629**	.308	.212	.535
Q16. Adapted	**.606**	.005	.153	.391
Q19. Resources	**.604**	.287	.250	.510
Q13. Support	**.492**	-.083	-.335	.361
Q3. Prepared	-.081	**.728**	.031	.537
Q4. Competent	.062	**.700**	-.039	.496
Q10. Difference	.396	**.576**	.177	.520
Q5. Social skills	.068	**.569**	.105	.340
Q6. Implementation	.127	**.507**	-.015	.273
Q8. Applicable	.390	**.400**	.048	.315
Q1. Mainstream	.244	**.387**	.344	.328
Q2. Detrimental	.162	.061	**.650**	.452
Q7. Adverse	-.004	.104	**.634**	.413
Q14. Beneficial	.355	.029	**.607**	.495
Q11. Reject	.234	.013	**.486**	.291
Q21. Policy	.394	.064	**.473**	.383
Q9. Difficulties	-.180	.247	**.453**	.299
Q20. Similar	.066	-.225	**.452**	.260
Q12. Chronological	.059	.335	**.395**	.272

Note. Major loadings for each item are bolded. PA = Positive Affect; TAPC = Training and Perceived Competence; NA = Negative Affect. For further information regarding the content of each item, contact the second author.

Table 2: Rotated component loadings by item for pre-service teachers

The definition of inclusive education question was categorised independently by the first author and another member of the research team. Inter-rater agreement was calculated using the Kappa Measure of Agreement, with a Kappa value of .90, $p < .001$. This suggested a very high level of agreement between the two raters (Peat, 2001), and confirmed the use of the categories as reliable for further quantitative study.

One-way between-groups analysis of variance (ANOVA) tests were conducted, and where a significant result was found, Cohen's d effect sizes were calculated. Cohen (1992) suggested the use of ranges of small (.20 for independent means), medium (.50 for independent means) and large (.80 for independent means). Cohen's d was chosen as the appropriate measure of effect sizes for the current study as it is the most widely used measure of effect sizes (Aron, Coups, & Aron, 2011). When considered individually against the pre-service secondary teachers' sample, having studied a module on inclusive education was not found to significantly affect the total inclusion score, or any of the subscales.

There was a significant difference for year of study at the $p < .05$ level. Across the study years for undergraduate students, there was a general decline in scores, while postgraduate students scored higher than undergraduate students. There was a significant difference for year of study on TIS, with $F (4, 181) = 9.08$, $p < .001$, $d = 1.76$. Figure 1 describes the trend of total inclusion scores across the years of study.
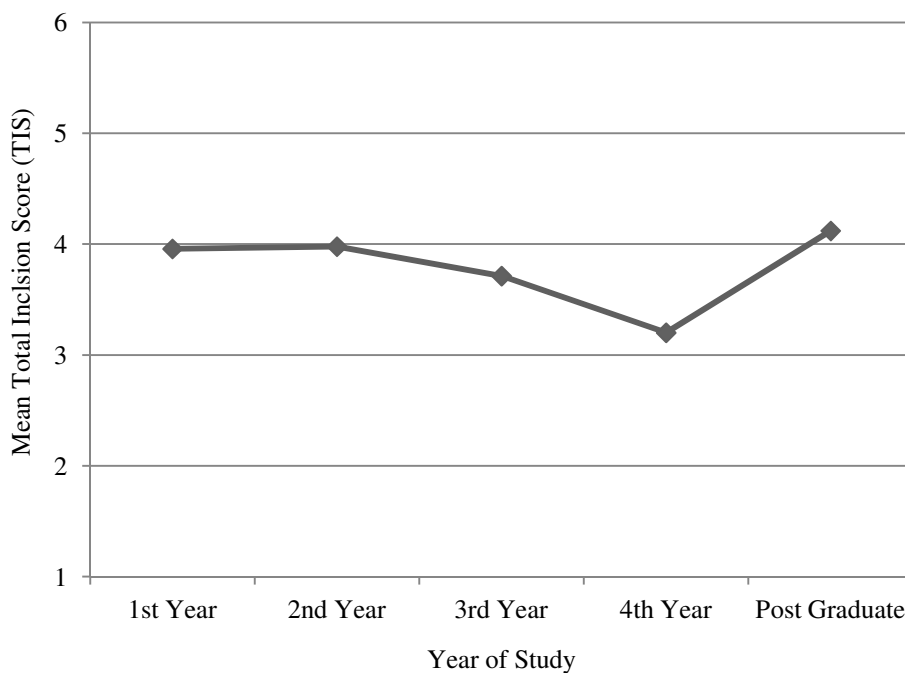.

Figure 1: Mean Total Inclusion Scores (TIS) by year of study.

There was a significant difference for year of study on PA, with $F(4, 184) = 5.84$, $p <$ .001, $d = 1.40$. There was a significant difference for year of study on TAPC, with $F(4, 185)$ $= 6.08$, $p < .001$, $d = 1.23$. There was a significant difference for year of study on NA, with F $(4, 183) = 7.05$, $p < .001$, $d = 1.81$. Cohen's d ranged from 1.23 to 1.60, suggesting that year of study had a large effect on scores (Cohen, 1992). Figure 2 describes the trend for each of the scales.
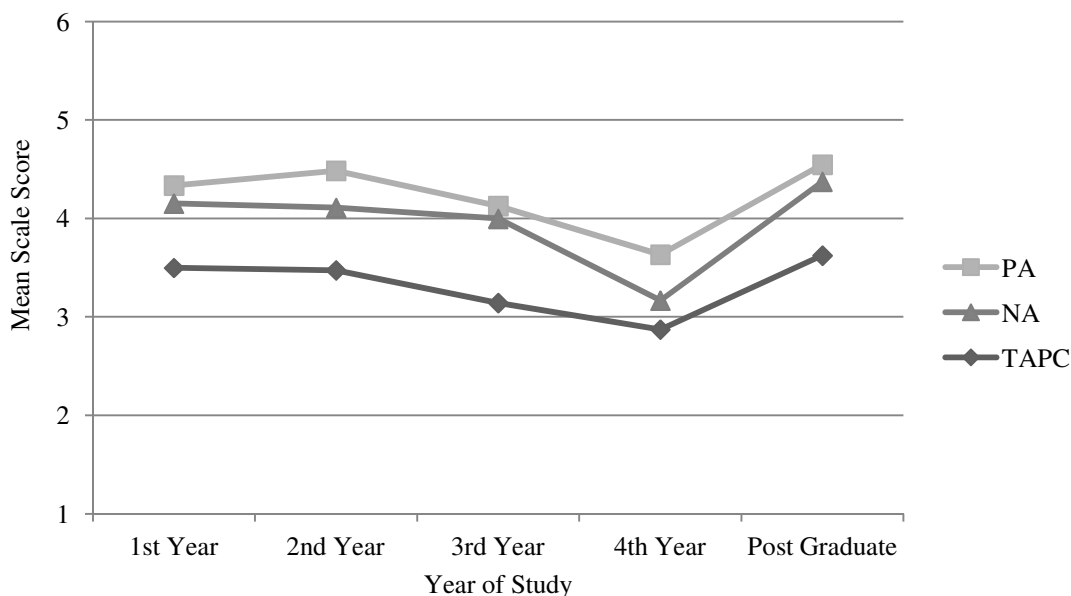

Figure 2: Mean scores for Positive Affect (PA), Training and Perceived Competence (TAPC) and Negative Affect (NA) by year of study

There was a significant difference for the definition of inclusive education at the $p <$ .05 level. Scale scores were higher for those participants who defined inclusive education

than those who did not. Figure 3 describes the trend in scale scores across the categories of definition of inclusive education.   There was a significant difference for definition of inclusion on TIS, with $F (4, 181) = 7.23$, $p < .001$, $d = 1.39$. There was a significant difference for definition of inclusion on PA, with $F (4, 184) = 6.82$, $p < .001$, $d = 1.25$. There was a significant difference for definition of inclusion on TAPC, with $F (4, 185) = 4.79$, $p < .001$, $d = 1.06$, although this result must be approached with caution as the assumption of homogeneity of variance had not been met (Levene's statistic = .015). There was a significant difference for definition of inclusion on NA, with $F (4, 183) = 3.17$, $p = .015$, $d = 1.00$. Cohen's d ranged from 1.00 to 1.39, suggesting that the ability to define inclusion had a large effect on scores (Cohen, 1992).
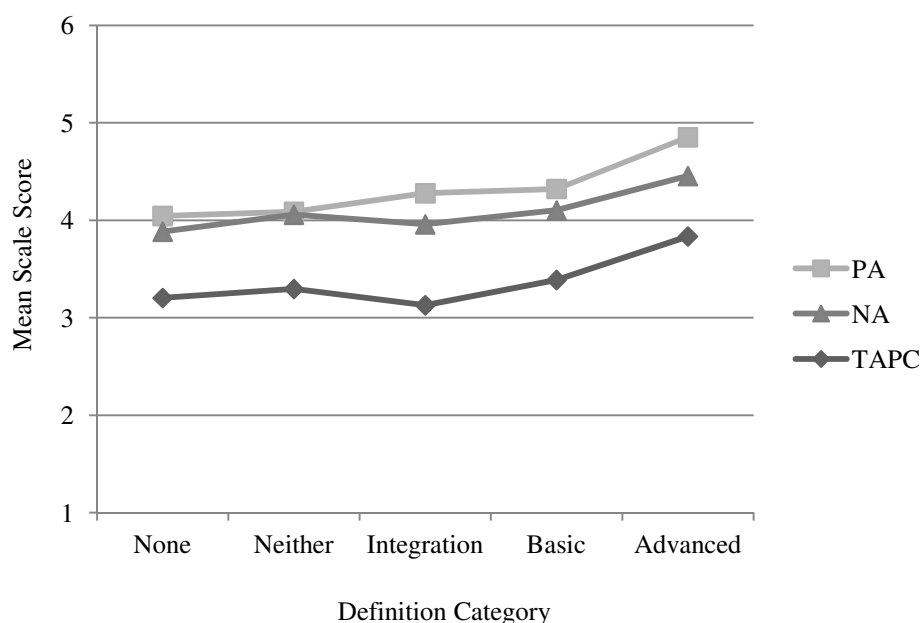

Figure 3: Mean scores for Positive Affect (PA), Training and Perceived Competence (TAPC) and Negative Affect (NA) by definition of inclusion category

Two-way between-groups analysis of variance (ANOVA) was conducted to investigate any interaction that may occur between the year of study and having studied a module on inclusive education. For TIS, no significant interaction with year of study was found having studied a module on inclusive education. A significant interaction for TIS was found between year of study and definition of inclusion, however this test violated the assumption of homogeneity of variance, with a Levene's statistic of .002 and .041 respectively. Due to largely unequal group sizes, there was a high likelihood of a Type 1 error occurring (Pallant, 2011; Tabachnick & Fidell, 2007) and this interaction was not considered reliable enough for further investigation.

For PA, no significant interaction with year of study and having studied a module on inclusive education was found. A significant interaction for TAPC was found between year of study and having studied a module on inclusive education, with $F (2, 180) = 2.68$, $p = .033$.

An analysis of simple effects for having studied a module on inclusive education over years of study revealed no significant differences in TAPC for participants in first, second, third or fourth year of study; however a significant difference was noted for postgraduate participants. Postgraduate participants who identified as having completed a module on inclusive education scored higher in TAPC ($M = 3.85$, $SD = 0.62$) than those who identified as not having completed a module on inclusive education ($M = 3.14$, $SD = 0.49$), with $F (1,$

17) = 5.89, p = .027, d = 1.27. Cohen's d indicated that having studied a module on inclusive education had a large effect on TAPC scores for postgraduate participants (Cohen, 1992). For NA, there were no significant interactions with year of study for having studied a module on inclusive education; and for definition of inclusion. Table 3 details the distribution of having completed a module on inclusive education by year of study.

Module	Postgraduate	1st year	2nd year	3rd year	4th year
Yes	68.4%	13.8%	51.3%	51.5%	77.8%
No	31.6%	86.2%	48.7%	48.5%	22.2%

Table 3: Percentages of having completed a module on inclusive education by year of study

A chi-square test for independence was calculated for year of study and definition of inclusion, to determine any significant changes across year of study. Due to the unequal distribution and large number of combinations, 13 cells did not meet the assumption for a minimum cell size of five (Pallant, 2011) and the results were not interpretable. The distribution of definition of inclusion by years of study is detailed in Table 4.

Category	Postgraduate	1st Year	2nd Year	3rd Year	4th Year
None	10.5%	17.2%	25.6%	36.8%	22.2%
Neither	10.5%	10.3%	5.1%	8.8%	0%
Integration	10.5%	12.1%	2.6%	13.2%	0%
Basic	52.6%	53.4%	46.2%	36.8%	66.7%
Advanced	15.8%	6.9%	20.5%	4.4%	11.1%

Note. None = did not provide a definition, Neither = did not define either integration or inclusion, Integration = defined integration rather than inclusion, Basic = basic definition of inclusion, Advanced = advanced definition of inclusion.

Table 4: Percentages of definition of inclusion categories by year of study

Discussion

This study has highlighted the importance of investigating the attitudes of pre-service secondary teachers across the years of study. If the sample had been considered as a whole, it would have been reported that with a mean TIS score of 3.86, pre-service secondary teachers were positive in their attitudes towards inclusive education (a 6 point Likert scale has a median of 3.5). Previous research has focused on considering the attitudes of pre-service teachers as a group (Forbes, 2007; Sze, 2009) or on the effectiveness of training programs for pre-service teacher attitudes (Loreman, et al., 2007; Sharma, et al., 2008). By investigating attitudes across year of study, it was possible to observe the changes evident during training.

There was a concerning downwards trend in attitudes towards inclusive education across the years of study. Participants reported more positive attitudes towards inclusion in their first year of university than in following years. This did not support the hypothesis that as pre-service secondary teachers' progress through their professional training, their attitudes towards inclusive education would improve. Contrary to the hypothesis, participants in their third and fourth year of study were significantly less inclusive than those in the earlier years of study. However, this result is consistent with research conducted by Boyle, Topping and Jindal-Snape (In Press) who found that trained teachers' attitudes towards inclusion became less positive after the first year of experience as a teacher.

While there was a downward trend in attitudes towards inclusion over the years of study, an investigation into the positive affect, training and perceived competence, and negative affect scales suggests that training and perceived competence is the area of most concern. As demonstrated in Figure 2, it is clear that while the downwards trend remains for all scales, participants' attitudes towards their training and perceived competence are considerably lower than their attitudes towards positive affect and negative affect items.

The results of this study suggest that the participants were not as positive in their attitudes towards their training and perceived competence as they were in their attitudes towards inclusion as represented by the positive and negative affect scales. Attitudes towards training and perceived competence became less positive over the years of study, and one explanation for this decline may be as pre-service secondary teachers gain experience and a greater understanding of their future role as teachers, any deficiencies in their training may become more evident.

This finding was consistent with research conducted by Forlin, Keen and Barrett (2008) who found that 93% of teachers surveyed felt that they had insufficient pre-service training to cater for children with special education needs in a mainstream classroom. This concern is reflected in the less positive attitudes towards training and perceived competence in the current sample of pre-service secondary teachers. For the current sample, it is an important distinction that the scale measures are for participant attitudes towards their training and perceived competence, and not a measure of actual training or competence. The implication of the less positive attitudes towards training and perceived competence in this sample suggest that pre-service secondary teachers are not feeling adequately trained or prepared to implement an inclusive approach to education, and this feeling of inadequacy becomes more evident through the years of study. A study by Woodcock (2011) noted a similar downwards trend in personal teacher efficacy across the duration of training in a sample of Australian pre-service secondary teachers, and it is possible that the perception of not feeling adequately trained and competent is not only limited to the implementation of inclusive education.

An interesting point of note was that participants enrolled in a postgraduate course for teacher education were significantly more positive in their attitudes towards inclusive education than participants enrolled in an undergraduate course. Typically, pre-service teachers in postgraduate courses have completed an undergraduate degree or course in a non-education field, and undertake the postgraduate study to complete the education specific modules required for teacher registration. The sample included 68.4% of postgraduate participants who identified as having studied a module on inclusive education and these participants were found to have a significantly more positive attitude towards their training and perceived competence than participants who had not studied a module on inclusive education.

A review of the university's core education modules completed by study year suggested that fourth year undergraduate and postgraduate pre-service secondary teachers undertake similar training and practical experience, with one notable exception. Pre-service secondary teachers enrolled in a postgraduate training program undertake a module on diversity, which includes strong themes about individual differences and inclusive education. Pre-service secondary teachers in the undergraduate training program did not undertake a core education module relating to inclusive education, although there was an opportunity to undertake an elective module on special needs education in the fourth year of undergraduate study.

From Table 3, it is evident that more than half of the pre-service teachers in their second, third and fourth year of study identified as having studied a module on inclusive education; however the single explicit module on inclusive education is only available as an

elective in the fourth year of study for the undergraduate program. It is unlikely that more than half of second and third year pre-service secondary teachers could have studied the fourth year elective module on inclusive education. This suggests that the undergraduate training program may have been utilising an infusion approach to training for inclusive education, where content relating to inclusive education is introduced across a variety of modules.

The postgraduate training program utilised a specific module to train for inclusive education, and having completed a module on inclusive education was a significant predictor of positive attitudes for postgraduate pre-service secondary teachers. Previous research by Sharma, Forlin and Loreman (2008), was unable to conclude whether utilising a specific module was more effective than an infusion approach to training for inclusive education, and the results of this study suggest that a specific module is more effective than an infusion model.

It could be suggested that effective training for inclusive education would be underpinned by a sound understanding of what inclusive education actually is. The definition of inclusion question was investigated as a reflection of the effectiveness of pre-service teacher training for inclusive education, with the expectation that an increased understanding of and knowledge about inclusive education would result from effective training. It was expected that participants who could define inclusive education effectively would score higher than those participants who could not define inclusive education, and the results supported this hypothesis. Participants who provided an advanced definition of inclusive education scored significantly higher on total inclusion score than other participants.

As detailed in Figure 3, attitudes across all scales were relatively stable for those who did not provide a definition; those who defined neither integration nor inclusion; and those who defined integration rather than inclusion. There was a general trend towards an improvement in attitudes for those who provided either a basic or advanced definition of inclusion. This suggests that having an understanding of inclusive education is related to more positive attitudes towards inclusive education, and provides a point of reference for educators of pre-service secondary teachers. It should be noted that 25.4% of the sample did not provide a definition, which may not be representative of the understanding of inclusive education. Not providing a definition could be explained by an inability to answer the question, or it could be representative of other factors such as unwillingness to provide an answer, or not having sufficient time to complete the survey.

While the results of the definitions of inclusion across years of study were not suitable for statistical interpretation in this study, the trend of the scales across years of study do not support the hypothesis that there was a particular improvement in the ability to define inclusive education over the years of study. However, the results did support the hypothesis that an improved ability to define inclusive education was related to higher scores and more positive attitudes towards inclusion.

The primary limitation of this study was the low numbers of fourth year pre-service secondary teachers sampled. This was due primarily to the extended period of professional placement undertaken by fourth year pre-service secondary teachers, which occurred throughout the survey collection phase of this study. The low numbers dictate that caution be used for all comparisons with the fourth year group. While this caution is acknowledged, there remained a significant difference between the attitudes of postgraduate and all other pre-service secondary teachers, and a significant downward trend in attitudes from first to third year pre-service secondary teachers.

A second limitation of this research was that the sample was drawn from pre-service secondary teachers enrolled in courses at only one Australian university. Future research could replicate this study in other Australian universities and internationally, to assist in

comparisons between university training programs, and to determine any differences in training programs that may impact attitudes towards inclusive education. A longitudinal study which considers attitudinal changes of the same cohort across years of study would also add value to current studies in attitudes towards inclusive education.

Pre-service secondary teachers are positive in their attitudes towards inclusive education, although it is concerning that pre-service secondary teachers are becoming less positive over their years of study, and further investigation into university training programs and practical training experiences are warranted. A further concern is that pre-service secondary teachers are much less positive in their attitudes towards their training and perceived competence than towards other aspects of inclusive education. Previous literature has emphasised the importance of training to improve attitudes towards inclusive education, and there appears to be an opportunity for improvement in this area.

The implication of this study is that a focus on training and improving pre-service secondary teachers' understanding of inclusive education would be of considerable advantage if attitudes towards inclusive education are to be improved. For inclusive education to be an achievable goal in secondary schools, and for an increased social inclusion and valued status for all children, a greater emphasis must be made for training to improve attitudes towards inclusive education across all years of study for pre-service secondary teachers.

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