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Relations between Commitment to a Treatment Orientation and Self-efficacy among Teachers Working with Children with Autism

Abstract

This study examined the correlation between commitment to specific treatment orientations and teacher self-efficacy. The participants included 115 teachers working with children with autism. Teachers using one of the two different treatment orientations participated in the study; as oriented towards Applied Behavior Analysis (ABA), and those committed to the Treatment and Education of Autistic and Communication-related Handicapped Children (TEACCH) orientation. The two groups were compared to a group of teachers with commitment to neither of these orientations (who served as a comparison group), in terms of personal and general teaching self-efficacy. The results suggested that teachers who identified themselves with the ABA orientation had a significantly higher personal teaching self-efficacy compared to the TEACCH group, as well as the comparison group. No significant difference was found among the three groups in terms of general teaching self-efficacy. The limitations of this study, as well as its implications for research and practices followed in working with children with autism, are discussed.

Key words: Teacher self-efficacy, Autism, Treatment Orientation.

Self-efficacy is defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance" (Bandura 1986, p. 391). It is a belief about what a person can do, instead of judgments about one's attributes (Zimmerman & Cleary, 2006). Self-efficacy is grounded on the social cognitive theory, which emphasizes the evolution and exercise of human agency – the idea that people can exercise some influence over what they do (Bandura, 2006; Skaalvik & Skaalvik, 2010).

Teacher self-efficacy refers to teachers' beliefs in their ability to influence the outcomes of students (Bandura, 1997; 2006; Lamorey & Wilcox, 2005; Woolfolk & Hoy 1990). It

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can affect teachers' instructional efforts in areas such as choice of activities, level of effort, and persistence with students (Tschannen-Moran & Hoy, 2001; Skaalvik & Skaaalvik, 2010). There are many approaches that can be used for conceptualizing and measuring teacher self-efficacy. One major theoretical basis which research on teacher self-efficacy has been based on, is Bandura's (1997; 2006) concept of self-efficacy. Bandura's ideas lead to the belief that teacher self-efficacy decreases if teachers believe that factors external to teaching (e.g., students' abilities and home environments) are more important to students' learning outcomes than the influence on a teacher's own self-efficacy in teaching may have. Researchers such as Amor et al. (1976) and Gibson and Dembo (1984) identified two major areas of teacher self-efficacy. One aspect is the degree of teachers' general beliefs about limitations to what can be achieved through education, i.e. the belief that factors external to their teaching limit what they (teaching) can accomplish (see Emmer & Hickman, 1991; Ho and Hau, 2004; Soodak & Powell, 1996). This is referred to as general teaching efficacy, GTE. Another aspect refers to teachers' beliefs about whether they, personally, can significantly enhance the learning of their students (Lin & Gorrell, 1998). This is termed as personal teaching efficacy, PTE. If teachers are self-efficacious, they are more likely to plan appropriate activities, persist with students who are having difficulties, and expend considerable effort in finding appropriate teaching materials. They are also more likely to overcome situations that challenge their ability to teach (Gruskey, 1998). They tend to be more optimistic than their peers, and make greater efforts in their jobs, while taking more personal responsibility for their successes and failures. In contrast, teachers who report low self-efficacy are more likely to attribute their successes or failures to outside factors, such as lack of resources.

Previous research on teacher efficacy has largely focused on mainstream classrooms; very few studies have investigated special education settings. Allinder (1994) found that special needs teachers (i.e. teachers teaching students with special needs) with high sense of efficacy tended to exhibit greater organization, fairness, and clarity in instruction. They were also more inclined towards instructional experimentation – that is, "willingness to try a variety of materials and approaches to teaching, desire to find better ways of teaching, and implementation of progressive and innovative techniques" (p. 89). Researchers such as Cherniss (1993), Friedman (1999), and Hoy and Spero (2005) suggested that adequate training, or training in innovative techniques, may enhance one's sense of competence, and one's teaching efficacy.

Autism is a pervasive developmental disorder, and teachers usually work closely with students only after the typical features of autism become most obvious. There is evidence suggesting that specific knowledge of a whole range of different aspects of the disorder, and a correspondingly flexible and facilitative approach to the teaching process, are central to achieving optimal education for children with autism (Jordan & Powell, 1995). Working with children with autism involves many different approaches. Two most common approaches are applied behavior analysis (ABA) and the treatment and education of autistic and related communication handicapped children (TEACCH) approach (Humphrey & Parkinson, 2006). These two approaches are the most widely

used and are implemented in school systems by educators, social service providers as well as parents (Hess, Morrier, Heflin, & Ivey, 2008). According to Cherniss and Krantz (1983), identification with a formal ideology may help increase feelings of competence and teacher self-efficacy. Jennett, Harris and Mesibov (2003) further suggested that being committed to philosophical tenets of either ABA or TEACCH approach, when treating children with autism, can be equated to identifying with a formal ideology because they both provide external frameworks that specify how to achieve certain goals, and why these goals are important. Both approaches seek to achieve independence for individuals with autism, and stress that teaching in a natural environment is important. However, the two approaches do differ in several respects. For example, ABA principles rely on external reinforcement as the primary way to engage children in a task, whereas the TEACCH approach uses visually structured activities based on interests and cognitive profiles of children, which promote an implicit understanding of the task the child is engaged in. Another difference between the two approaches lies in management of the problem behavior. Teachers with ABA training assess environmental characteristics and enduring components of the problem behavior, whereas TEACCH teachers assess how and what difficulties their students experience in understanding the environment, and how they are coping with the sensory stimulation, based on neuropsychological deficits. Despite these differences, both approaches are built on the same core values and encourage commitment to an external frame of reference. Teachers who have a formal ideology are expected to be more competent in working with children with autism, and hence have a higher teacher self-efficacy.

Hong Kong situation
Like the rest of the world, the trend in Hong Kong is also moving towards inclusive education practices (Forlin and Lian, 2008). Currently, integrated education is implemented through a whole school approach in Hong Kong. Mainstream schools are invited to include students with any of the five listed types of disabilities: mild grade intellectual disability, visual impairment, hearing impairment, physical disability and autistic disorder, with average intelligence (Education Bureau, 2007). At present, there are no specific qualifications or experience required of teachers (in mainstream schools) working with special needs children. In general, teachers have to obtain teaching qualifications in one of the designated tertiary institutions. Those who have to work with children with special needs have to take extra training in special education (terms of course work and in-service workshops). Apart from this kind of training for special education, there are no mandatory qualifications stipulated for teachers teaching children suffering autism (regardless of whether they are working in mainstream schools or in special schools); they are not required to complete any formal specialized training for this purpose, i.e. teaching children with autism. However, some teachers have mentioned that they are not confident enough to deal with children with autism, and have urged that they be trained and equipped with knowledge and skills required for dealing with children with autism. Very few studies have explored teachers' abilities in relation to their work with children with autism.

The present study
This study was intended to be a follow-up to Jennett, Harris and Mesibov (2003), who worked on ascertaining a teacher's commitment to his/her teaching approach, as well as a way of exploring the relationship of the commitment to teacher self-efficacy. Given that Cherniss and Krantz (1983) and Jennett et al suggested that identification with a formal ideology may help increase feelings of competence and teacher self-efficacy, it was hypothesized that teachers who are committed to a specific treatment orientation while working with children with autism would have higher teacher self-efficacy (in terms of personal teaching efficacy, and general teaching efficacy), in comparison to those without any treatment orientation (the control group). In relation to this, teachers who identify with ABA would be more committed to the underlying ABA philosophy, and teachers identifying with the TEACCH approach would be more committed to the underlying TEACCH philosophy. The difference between efficacy of ABA and TEACCH teachers was also explored.

Method

Participants
One hundred and fifteen teachers working with children with autism in the special education setting participated in the study. Thirty-eight teachers reported an ABA focus, 37 reported a TEACCH focus, and 40 teachers were in general practice, without commitment to a particular underlying philosophy of teaching. The sample was predominantly female (n=109, 95 percent). In terms of participant age, 18 percent were aged 25 or below, 30 percent were aged 26-30, 14 percent were aged 31-35, 17 percent were aged 36-40, and 12 percent were aged 41-45. The remaining 9 percent were aged 46 and above. In terms of work experience, the majority of participants (32 percent) had worked with children with autism for 4-6 years, 25 percent for 1-3 years, 17 percent for 7-9 years, 16 percent for less than 1 year, and 10 percent for 10 or more years. Most participants (n=102) had received formal (certificate) training in special education, or an undergraduate degree in psychology, education, or some other relevant subjects. Thirteen had postgraduate qualifications. A total of 190 questionnaires were distributed; 115 usable questionnaires were returned. The response rate was 60 percent.

Instruments
The Autism Treatment Philosophy Questionnaire (ATPQ, Jennett, Harris, & Mesibov, 2003) was administered to investigate the teachers' intervention approach in teaching children with autism. This 22-item questionnaire was developed by Jennett et al. on the basis of the literature about each treatment approach. In the process of item development, the items were rated by six clinicians, three with a commitment to the TEACCH approach, and three with a commitment to the ABA approach. Then four leading experts from each approach were asked to rate all items on a 6-point continuum, reflecting the degree to which each statement accurately reflected their philosophy. The items on TEACCH were statements that received a mean rating of at least 5 from the four experts, or an average rating that was at least 2 points lower than the TEACCH mean, from

experts in ABA. The participants were asked to state how well each of the 22 items fit with their personal approach to teaching, on a 6-point continuum (1 = strongly disagree to 6 = strongly agree). Of these 22 statements, 6 targeted the ABA philosophy (e.g., "Making available powerful reinforcers is one of the best ways to engage a child in an activity") and 6 targeted the TEACCH approach (e.g., "My approach to teaching focuses on both observable behavior and other unobservable variables, such as how my students think, understand the environment, and integrate information"). The remaining 10 statements reflected a shared philosophy (e.g., "Children make the most educational progress when there is a close link between home and school"). The questionnaire yielded three scores for each participant: an ABA score, a TEACCH score, and a Shared score (score on Shared philosophy). Each participant's commitment score was the score associated with his/her identified teaching orientation. For example, for teachers identifying ABA as their teaching orientation, the ABA score was the commitment score.

To measure teaching efficacy, a modified version of the Teacher Efficacy Scale (TES) for special educators (developed by Coladarci & Breton, 1997) was administered to the participants. The original scale developed by Gibson and Dembo (1984), which is used on regular educators, includes personal, as well as general teaching efficacy, i.e. PTE and GTE. Participants were asked to indicate their level of agreement with 30 items (each item corresponding to one of the two dimensions) on a 6-point scale (from 1 = strongly disagree to 6 = strongly agree). For both dimensions, the higher the score is , the more efficacious it is. Although the validity and reliability of this modified version has not been established, the original version of the scale has demonstrated adequate discriminant and convergent validity, as well as internal consistency reliability, with Cronbach alphas ranging from .75 to .79 (Dembo & Gibson, 1985; Hoy & Spero, 2005). Examples of items for GTE include "If students aren't disciplined at home, they aren't likely to accept discipline" and "If parents would do more for their children, I could do more." Examples for PTE include: "If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next lesson" and "When I really try, I can get through to most difficult students". Permission was obtained from the authors of the two questionnaires, to translate the items into Chinese. The items were translated by the researcher and five bilingual people independently. The translations were examined and discussed by three translators. The final version of the Chinese form for ATPQ and TES were confirmed after some modifications.

Procedure
Following the approval from the university's ethics committee for conducting this research, a survey package containing the questionnaire and a letter explaining the purpose of the study, together with the consent form for participation, was sent out to potential participants. These people were invited to join this study on a voluntary basis. The participants who agreed to participate in the study completed the questionnaire according to the instructions given. To ensure anonymity, all completed questionnaires were returned directly to the researcher, without the name of the respondent, using a self-addressed envelope that was supplied along with the questionnaire.

Results

Factor structure
The dimensionality of items from TES and ATPQ were analyzed using maximum likelihood factor analysis. The Kaiser criterion and the scree test (Cattell, 1966) were used to determine the appropriate number of factors. To examine item loadings, only items with factor loadings greater than .30 were included. For the 22-item ATPQ, the Kaiser criterion yielded a total of 7 factors, with eigenvalues of more than 1.0. Based on the scree plot, two factors were loaded. Table 1 shows the two interpretable factors. Factor 1 refers to items in TEACCH, and Factor 2 to items in ABA. For each factor, two additional items from the original Shared sub-scale were included: Items 12 and 16 obviously belonged to Factor 1, and Items 3 and 9 to Factor 2 (see Table 1 for details). For the 30-item TES, the Kaiser criterion yielded a total of 7 factors, with eigenvalues of more than 1.0. Based on the scree plot, two factors were rotated, using a varimax rotation procedure. The rotated solution, as shown in Table 2, yielded two interpretable factors. Following Coladarci and Breton (1997), these two factors could be grouped into: i) personal teaching efficacy and ii) general teaching efficacy. Items with loadings of less than .30 were deleted.

An inter-correlation matrix of factor scores was then constructed. For ATQ, there were significant correlations between ABA and Shared ($r = .47$, $p = 0.00$), as well as between TEACCH and Shared ($r = .33$, $p = 0.02$). However, non-significant correlation was noted between ABA and TEACCH, which indicated that TEACCH and ABA statements in ATQ represented the uniqueness of each approach. A moderate correlation existed between general teaching efficacy and personal teaching efficacy ($r = .50$, $p = .05$).

Estimates of internal consistency
Internal consistency for each factor was estimated across the two scales. Alpha coefficients for factors of each of the two scales were as follows: TEACCH, .57; ABA, .79; Shared, .73; General Teaching Efficacy, .65; and Personal Teaching Efficacy, .78. The results suggest that the levels of internal consistency were within an acceptable range.

Differences among groups
The three groups were compared according to their ABA, TEACCH, and Shared scores on the ATQ with three separate ANOVAs (see Table 3). Teachers having ABA orientation ($M = 32.15$, $SD = 2.27$) had a significantly higher ABA score than those with TEACCH orientation ($M = 27.91$, $SD = 3.61$), or with no orientation [$M = 26.45$, $SD = 3.61$; $F (2, 112) = 32.41$, $p = 0.00$]. In terms of TEACCH as a teaching orientation, there was a significant group difference, with $F (2, 112) = 11.88$, $p = 0.00$). Schefe post-hoc comparison showed that teachers with a TEACCH orientation ($M = 26.22$, $SD = 2.66$), and those without an orientation ($M = 25.75$, $SD = 2.65$), had a significantly higher TEACCH score than teachers with ABA orientation ($M = 23.42$, $SD=2.69$). On the Shared dimension, teachers in the ABA group (M = 54.08, SD = 2.13) had significantly

higher scores than teachers in the TEACCH group (M = 49.76, SD = 5.49), as well as the no orientation group [$M = 48.30$, $SD = 4.29$; F (2, 112) = 19.77 $p = 0.00$].

Table 1.

A summary of items and their factor loadings for each factor on ABA and TEACCH of the ATPQ

	Factors	
Items	TEACCH	ABA
TEACCH items		
1.. ….rarely teaching a cognitive skill ….without that child showing interest……	**.35**	.14
2. ….focuses on both observable behaviors and other unobservable variables…	**.55**	.15
15. One of the responsibilities of teacher….understand personal experience…..	**.39**	.15
18. …less concerned with finding powerful reinforcers…than making sure activities are meaningful…	**.39**	.16
19.….students learn best when their strengths and interests are emphasized… deficits ..minimized.	**.34**	.09
20.….figure out underlying autism deficit….trigger mechanism.	**.72**	-.04
12. Children make the most educational progress…..close link between home and school. #	**.68**	.13
16. To track development of students emerging skills……evaluate performance early in school year…and later on. #	**.73**	-.14
ABA items		
7. ….collect systematically graphed data on all students' learning….	.34	**.50**
8. Making …..powerful reinforcers…..engage a child in an activity	.30	**.47**
10. Principles of learning…..key aspects to….teaching.	.30	**.74**
11. ….educational plan…..remediate a student's areas of deficit.	.19	**.65**
14. …expect students to respond to instructions in a natural environment	.14	**.41**
22. ….most powerful tool as a teacher….pair positive consequences with desirable behavior	.19	**.53**
3. …structure the environment to stimulate….spontaneous communication. #	.27	**.61**
9 …important to plan for generalization and independence of skills #	.26	**.63**
Shared items		
5. …...make enough progress…..still need some form of support throughout lifespan	.44	.46
6. …learning characteristics …necessary to have specialized education services	.38	.37
13. …introduce novelty to prevent resistance to change	.37	.31
17. …important ….show respect for all children in my classroom	.26	.31
21. ..try to find communicative intent of a student's misbehavior	.39	.33

 # originally scored under the factor on Shared
^ item 4 was deleted because of its factor loading (below .30)

Table 2.

A summary of items and their factor loadings for each factor on personal teaching efficacy and general teaching efficacy subscales of the TES

	Factors	
Items	PTE	GTE
Personal Teaching Efficacy (PTE) items		
1 …student does better than expected….I exerted a little extra effort	**.54**	-.13
3 parents comment…child behaves better….techniques managing their child's behavior	**.42**	-.08
6 …enough training to deal with most learning problems	**.68**	-.02
7 …I have obtained necessary skills to be an effective teacher	**.68**	.11
11 …student having difficulty with an assignment….adjust it to the student's level	**.38**	-.13
14 …students show improvement,…. found better ways of teaching	**.32**	.26
15 If I try hard,….get through to …most difficult student	**.33**	.17
17 If my student …disruptive,…ask myself what I've done differently	**.36**	.14
18 …students improve,….because I found more effective teaching approaches	**.60**	.42
19 …change class curriculum, feel confident….necessary skills to implement the change	**.71**	.12
20 …students mastered a new concept quickly,….knew necessary steps to teach that concept	**.71**	.35
24 If student did not remember information……I know how to increase children's retention…	**.53**	.32
25 …students disruptive noisy,….know some techniques to redirect them	**.62**	.28
26 School policies…hinder my doing the job….	**.35**	.08
29 …couldn't do a class assignment,…accurately assess …assignment …correct level…..	**.78**	.28

Table 2. (cond.)

A summary of items and their factor loadings for each factor on personal teaching efficacy and general teaching efficacy subscales of the TES

	Factors	
Items	Personal Efficacy	General Efficacy

General Teaching Efficacy (GTE) items

Items	Personal Efficacy	General Efficacy
2 .time spent with students…little influence compared to the influence of their home….	.36	**.57**
4 If teachers have adequate skills…..reach even the most difficult students	.09	**.40**
5 …aren't disciplined at home,…aren't likely to accept any discipline in… program	-.45	**.44**
8 ….lack of support from community,…frustrated in my attempts to help students	.09	**.50**
9 ..students need to be placed in ..programs….not subjected to …regular class expectations	.13	**.40**
10 Individual differences among teachers…..account for wide variation in academic achievement …of students	.28	**.42**
12 …amount special education student …learn…primarily related to family background	.28	**.56**
13 …student can't remind on task,..little I can do to increase the student's attention	.41	**.72**
16 …teachers not a very powerful influence on…..students achievement.	.40	**.66**
21 …teachers can't do much because of a student's motivation…. home environment	.44	**.65**
23 …parents do more with their children,…I could do more …	.19	**.32**
27 …student's home experience …overcome by good teaching	.31	**.46**
30 …teacher with good teaching abilities may not reach many student	.28	**.78**

Note: Item 22 and 28 were deleted because of low factor loading (below .30)

Two separate ANOVAs were conducted to compare the groups according to the sense of teaching efficacy: one for the personal teaching efficacy score, and the other for the general teaching efficacy score. The results for personal teaching efficacy differed significantly between the groups [F (2, 112) = 15.34, p = 0.00]. Schefe post-hoc comparison revealed that the difference between ABA and the other two groups accounted for this overall difference. ABA teachers have significantly higher scores on personal teaching efficacy. No significant difference was observed in the treatment orientations for general teaching efficacy. The means and standard deviations of the dependent variables, by teaching efficacy (personal/general) group, are summarized in Table 3.

Table 3.
Mean scores on Treatment Philosophy and Teaching Efficacy for the three groups

	ABA (n = 38)		TEACCH (n = 37)		Control (n = 40)		(2, 112)
	M	SD	M	SD	M	SD	
Treatment Philosophy							
ABA	32.15	2.27	27.91	3.61	26.45	3.61	32.41**
TEACCH	23.42	2.69	26.22	2.66	23.42	2.69	11.88**
Shared	54.08	2.13	49.76	5.49	48.30	4.29	19.77**
Teaching Efficacy							
Personal	68.97	8.39	60.24	8.28	60.60	6.63	15.34**
General	54.51	3.05	55.84	8.60	55.67	5.88	0.40

Note: ABA = Applied Behavior Analysis; TEACCH = Treatment and Education of Autistic and Related Communication-Handicapped Children.
** $p<0.01$

A multiple regression analysis was conducted using the commitment score as the predictor variable of the two dimensions of teaching efficacy. Given that the commitment score was the score associated with the identified teaching orientation, only participants who claimed to have an orientation were included in this part of the analysis. The variable that represented commitment to a philosophy was significantly related to personal teaching efficacy, i.e. $F(1, 73) = 4.42$, $p = 0.04$. The sample multiple correlation coefficient was .24, indicating that approximately 6% of the variance of personal teaching efficacy in this sample could be accounted for by variables representing treatment orientations. As for general teaching efficacy, this predictor variable had a minimum effect - [$F(1, 73) = 3.39$, n.s.].

Discussion

We hypothesized that treatment philosophies of those working with children with autism would be related to their personal and general teaching efficacy. To test this hypothesis, a control group was used to compare teachers with no commitment to an orientation with those who had an orientation. The results partly supported the hypothesis that having an orientation contributes to a better sense of personal teaching efficacy in working with children with autism.

The current findings, which are similar to those of Jennett, Harris and Mesibov (2003), partly support the hypothesis that commitment to an underlying treatment orientation is an "appropriate tool" for enhancing self-efficacy in teaching. When teachers have an

orientation while working with children with autism, they will have a stronger belief in the ability of their role to make a difference to the children they are working with. This finding may have an implication for training of teachers who work with children having special needs. The earlier one can commit to, or understand, the underlying theoretical orientation of a teaching approach, the greater would be one's sense of professional efficacy, in here, teaching efficacy, and possibly reducing teachers' burnout (Skaalvik & Skaalvik, 2010).

With reference to the two major approaches of working with children with autism, only teachers who identify themselves as having an ABA teaching orientation have a high sense of personal teaching efficacy. There could be many reasons for such a pattern in results. One possible reason could be that there are some underlying factors (such as level of knowledge and skills) that lead to teachers taking up the ABA approach while working with children with autism. The current sample was too small in exploring further relationships between approach taken in relation to age and/or relevant work experience. More work is needed to investigate factors that possibly associate with this stance. Another possible reason could be psychometric properties of the ATPQ in defining the characteristics and uniqueness of each treatment approach. With reference to the non-significant score on general teaching efficacy, the results may suggest that there is an overall belief among teachers (regardless of whether they have a treatment orientation or not) that there are external factors that put limits to what they can accomplish from their work with children with autism.

Notwithstanding these significant findings, the results of this study should be interpreted with caution. First, the sample size was relatively small. A larger sample can be used to validate the current findings. Second, the instruments used in the study need further analysis for psychometric properties, before conclusions can be drawn. Nevertheless, the study has explored "commitment to an approach" as a variable, which has not been investigated before, for investigating self-efficacy of Hong Kong teachers working with children with autism. Future teacher training or continuous education courses should incorporate an element of commitment to a treatment philosophy to facilitate teachers' self-efficacy in working with children with autism. In relation to this, more empirical studies should be conducted to explore different strategies to help teachers identify their teaching orientations, and consequently leading to positive change of one's teaching efficacy.

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