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Exploring the intentions and practices of principals regarding inclusive education: an application of the Theory of Planned Behaviour

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This study aimed at providing explanation and prediction of principals' inclusive education intentions and practices under the framework of the Theory of Planned Behaviour (TPB). A sample of 209 principals from Hong Kong schools was surveyed using five scales that were developed to assess the five components of TPB: attitude, subjective norm, perceived behaviour control, intention, and behaviour. Rasch analysis was utilised to examine the psychometric quality of the scales and generate principals' measures, which were subsequently subjected to path analysis to investigate the relationships among the five components. The results revealed a good model–data fit. Principals' attitude and perceived subjective norm were strong and significant predictors of their intention to implement inclusive education. The predictive power of perceived behaviour control on intention was not significant. Intention and perceived behaviour control were found to have significant predictive power for principals' reported inclusive practice. The implications of the findings are discussed.

Keywords: inclusive education; Rasch measurement; Theory of Planned Behaviour; principal; path analysis

Introduction

As a campaign for enacting social justice and respect for diversity, inclusive education has gained increasing attention after the concept of 'Education for All' was initiated by the United Nations in 1990. There has been an international trend to place students with special educational needs (SEN) in mainstream schools, instead of in segregated special schools since that time. The Salamanca Statement (UNESCO, 1994), which affirmed that all children should be educated in mainstream schools unless there are compelling reasons for not doing so, further promoted inclusive education as the major approach to achieve equal learning opportunities in a non-discriminatory atmosphere and imposed obligations on governments worldwide.

Extensive research has supported that the school principal plays a pivotal role in shaping instructional practices (Hallinger, 2005; Marks & Printy, 2003) as well as school culture and practices (Habegger, 2008; McGuigan & Hoy, 2006). More specifically, principals' strong impact on inclusive education or related issues in schools

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has been well documented. Stanovich and Jordan (1998) found that principals' attitudes and beliefs about heterogeneous classrooms and expectations of their teachers to implement inclusion were strong predictors of teachers' effective teaching behaviour in heterogeneous classrooms. Special education and educational leadership intersect and the principal was revealed to be a major player in the organisation of special education programmes (Crockett, 2002; Farrell, Dyson, Polat, Hutcheson, & Gallannaugh, 2007). Principals need to be capable of encouraging cooperation among staff and solving pedagogical problems in order to facilitate special education programmes in schools. The important role that principals play in inclusive reform initiatives has been discussed in previous studies (e.g. Conrad & Conrad, 2006; Gous, 2009). More recently, Conrad and Brown (2011) conducted qualitative research involving 18 school principals, with the results showing that principals were somewhat resistant towards assuming responsibilities for students with SEN although they embraced the rationale of inclusive practice. The major concerns came from issues such as teacher and school readiness for inclusive education, the measurement of teacher effectiveness and the efficacy of available support services.

In Hong Kong, the history of inclusive education can be traced back to the 1970s. In 1977, a government White Paper, 'Integrating the Disabled into the Community: A United Effort' recommended educating students with disabilities in mainstream schools (Luk, 2005). However, progress in Hong Kong towards inclusive education since then has been slow and the goal of inclusion in mainstream was seen as often difficult, if not impossible, to accomplish (Sharma & Chow, 2008). The structural constraints to implementing inclusive education were located in the rigid curriculum and schools' accountability for good academic results regardless of student competence (Wong, Pearson, & Lo, 2004). The tension between the adherence to academic excellence and the philosophy of equality remains quite salient in Hong Kong, where Western-originated ideas such as inclusion have been introduced to a predominantly Chinese culture (Luk, 2005). As a response to the Salamanca Statement (UNESCO, 1994), the Hong Kong government became more active in promoting inclusive education. The rights of SEN students to receive regular education in mainstream schools were legislated by the 'White Paper on Rehabilitation: Equal Opportunities and Full Participation: A Better Tomorrow for All' (Health, Welfare, and Food Bureau, 1995) and the Disability Discrimination Ordinance – Code of Practice on Education (Equal Opportunities Commission, 2001). Under current Hong Kong policy, although students with severe or multiple disabilities who need high levels of support are still educated in special schools, most students with mild SEN are encouraged to study in mainstream schools whenever possible. The concept of a whole-school approach to catering for diversity, which emphasises creating an inclusive environment by involving all staff and school personnel, has been immersed in schools (Forlin & Sin, 2010) and schools are required to provide appropriate support to cater for students' SEN and help them to achieve full development (Rehabilitation Advisory Committee, 2007). This is consistent with the spirit of inclusive education that requires the school to undergo radical reform in terms of curriculum, pedagogy and assessment to cater for increasingly diverse pupils (Nind, 2005). Extra support measures, such as funding for equipment and accommodation, and additional manpower (resource teachers and learning support assistants), were allocated by the government to schools for the implementation of inclusive education (Education and Manpower Bureau, 2005). Currently, about 60% of Hong Kong

mainstream schools are provided with extra funding for supporting students with different levels of SEN (Sin, 2010).

School principals in Hong Kong are now expected to lead a significant change of school culture – from competitive and individualistic learning towards cooperative learning in inclusion (Sharma & Chow, 2008) – but, unfortunately, very limited attention has been paid to principals' attitudes and beliefs regarding inclusive education. One exception is a study (Sharma & Chow, 2008) which reported that primary school principals in Hong Kong held slightly negative attitudes towards inclusive education. Principals with less teaching experience and those from schools with smaller student enrolments held more positive attitudes towards inclusion. International literature has documented the determining impact principals have on school change including inclusion; however, a structural understanding of the relationships among attitude, belief and practice remains missing. Furthermore, previous local and international studies of principals regarding inclusive education usually utilised case study methodology or involved small samples (less than 30) (for example, Conrad & Brown, 2011; Gous, 2009; Kuyini & Desai, 2007; Luk, 2005; Mattson & Hansen, 2009; Stanovich & Jordan, 1998; Wong et al., 2004) thereby limiting the generalisation of those studies' implications.

In order to build a structural understanding of how principals perceive and react to inclusive education, the Theory of Planned Behaviour (TPB) (Ajzen, 1985, 1991) was adopted as a theoretical framework. TPB provides a framework for exploring the relationships among attitudes towards behaviour, subjective norms, perceived behavioural control, intention and behaviour. According to the theory, three interlinked variables including attitude towards the behaviour, subjective norm, and perceived behavioural control lead to the formation of a behavioural intention, which, together with perceived behavioural control, can predict the behaviour (Ajzen, 1991). As a general rule, those who have favourable attitudes, a positive subjective norm, and high level of perceived behaviour control will be more likely to have the intention to perform the behaviour. A higher level of intention and perceived behavioural control will lead to a higher probability of behaviour occurring.

The variables under investigation in the present study include principals' attitudes towards inclusive education, perceptions of important others' opinions about inclusive education, perceptions of professional training for staff involved, intentions towards inclusive education, and the inclusive policies in their schools. A subjective norm in TPB refers to perceived social pressure to perform or not to perform the behaviour. It is normally defined as an individual's perception of whether important others think the behaviour should be performed. In the present study, the subjective norm refers to principals' perceptions of the important others' (e.g. parents of students with/without SEN) opinions on inclusive education. Perceived behavioural control refers to the individual's perception of the ease (or difficulty) of performing the focus behaviour (Ajzen, 1991). Many factors influence the perceived ease of performing any particular behaviour. In this study, the perceived behavioural control was operationally defined as principals' perceptions as to whether professional training for staff involved (e.g. principal, teachers, teaching assistants) is adequate or not for implementing inclusive education since professional training is reported as one of the key determinants of successful implementation of inclusive education, and lack of training was perceived as one of the major difficulties (Conrad & Brown, 2011; Luk, 2005; Sharma & Chow, 2008; Wong et al., 2004). Principals tend to perceive inclusive education as less difficult if they think the training has been

adequate, and vice versa. The components of the theory and their relationships are presented in Figure 1.

TPB has been well documented and widely applied in the field of general education (Davis, Johnson, Cribbs, & Saunders, 2002; Ingram, Cope, Harju, & Wuensch, 2000; Sideridis & Padeliadu, 2001), as well as in inclusive education (Batsiou, Bebetsos, Panteli, & Antoniou, 2008; Campbell, 2010; Kuyini & Desai, 2007; Stanovich & Jordan, 1998; Yan & Sin, 2014). For example, Kuyini and Desai (2007) examined the relationships among Ghanaian teachers' attitudes toward inclusive education, knowledge of inclusive education (perceived behaviour control element), and principals' expectations (subjective norm element) of teachers' teaching practices. Stanovich and Jordan (1998) examined the prediction of teachers' attitudes, school norms and teacher efficacy on effective teaching in heterogeneous classrooms. Batsiou et al. (2008) investigated the relationships among attitude, subjective norm, knowledge, and intention of Greek and Cypriot primary teachers teaching pupils with SEN in mainstream schools. Campbell (2010) examined the impact of classroom inclusion on students without SEN. Attitude, normative beliefs, perceived control beliefs and students' intention to include peers with SEN were found to be significantly correlated with each other. These studies, however, have not fully instantiated the power of TPB. Some (Kuyini & Desai, 2007; Stanovich & Jordan, 1998) examined the predictive path directly from intention predictors, i.e. attitude, subjective norm, and perceived behaviour control, to behaviour thereby ignoring the intention element, which is a possible mediating variable and acts as the immediate antecedent of behaviour. Batsiou et al. (2008) included the intention element but missed the behaviour element in their framework. Furthermore, the analyses utilised in these studies were limited to descriptive statistics and correlations, without exploring the predictive relationships among the variables. Similarly, Campbell's (2010) study failed to provide evidence of the predictive path from attitude, subjective norm, and perceived behaviour control to intention. A recent study conducted by Yan and Sin (2014) surveyed 841 teachers from Hong Kong schools and concluded that TPB appeared to be a sound theoretical framework for understanding teachers' intentions and practices regarding inclusive education. Teachers' attitudes, feeling social pressure from important others, and confidence in

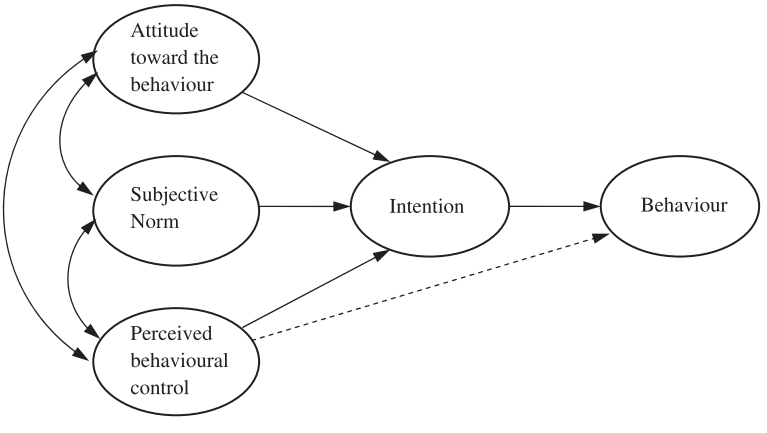

Figure 1. Theory of planned behaviour (Ajzen, 1991).

professional training for involved staff were found to be strong predictors of teachers' intentions to implement inclusive education. This intention, together with their confidence in the professional training of involved staff, predicted their reported inclusive practices. Yan and Sin (2014) provide more details of the fact.

Research questions

The current study furthers that previous research (Yan & Sin, 2014) to investigate another important – but less studied – stakeholder: the principal. It aims at examining the extent to which TPB can predict and explain principals' intentions towards and practices of inclusive education. The two complementary research questions include:

(1) Will principals' intentions to implement inclusive education be predicted by interrelated determinants including attitude, subjective norm, and perceived behavioural control?
(2) Will principals' inclusive education behaviour be predicted by intention and perceived behaviour control?

Method

Sample

A total of 209 principals of Hong Kong primary and secondary schools, representing around one-fifth of the total number of mainstream schools in Hong Kong, completed the questionnaire. Among the participants, there were 102 (49.3%) males, 94 (45.0%) females, and 12 (5.7%) without gender information. In total, 126 (60.3%) participants were from primary schools and 83 (39.7%) from secondary schools. The majority of participants were aged 50 or above (130, 62.2%); 68 (32.5%) were aged between 40 and 49; 7 (3.3%) between 30 and 39; but four (1.9%) did not provide age information. As for the experience of being principal, 66 (31.6%) reported experience of 11 years or more; 50 (23.9%) had six to 10 years of experience; 85 (40.7%) reported five or fewer years of experience; and eight (3.8%) did not provide such information.

Instruments

Five scales were developed to investigate principals' attitude, subjective norm, perceived behaviour control, intention, and behaviour regarding inclusive education. The scale tapping principals' intentions regarding inclusive education was based on one (revised) subscale (behaviour intention) of the Multidimensional Attitudes toward Inclusive Education Scale (MATIES) (Mahat, 2008). This subscale contained six items (e.g. 'I am willing to adapt assessment of individual students to ensure that inclusive education can take place') and aimed at examining school teachers' intention to implement inclusive education in mainstream schools. A Cronbach's alpha of 0.91 was reported by Mahat (2008) for the original scale. Since, in Hong Kong schools, the principal is not the one who actually carries out inclusive practice (e.g. the use of differentiated instructional strategies and assessment methods to cater for students with SEN) in classroom, the precursor statement 'I am willing to' was

changed into 'I expect my teachers to' (e.g. I expect my teachers to adapt assessment of individual students to ensure that inclusive education can take place). Principals' responses to these items were expected to reflect the extent of their intentions to implement inclusive education.

The other four scales were developed, under the guidance of the procedure suggested by DeVellis (2012), specifically for the purpose of this study. The attitude scale (ATT – 27 items) examined principals' attitudes toward inclusive education. Items asked about principals' levels of agreement on including students with nine particular types of SEN (each at mild, moderate, or severe levels) in mainstream schools; e.g. 'Do you agree that students with mild hearing impairment should be included in regular classes?'

The subjective norm scale (SNS – five items) was used to gauge principals' perceptions of whether important others, i.e. the government, parents of students with and without SEN, teachers, and the community, advocate inclusion in schools. Five items, such as 'The parents of students with SEN believe that school should carry out inclusive education', were included in this scale.

Perceived behaviour control (PBC – five items) was inferred from principals' views on the adequacy of professional training for the five categories of staff involved in inclusive education in Hong Kong schools, including the principal, teachers, teaching assistants, school administrative staff, and other professional team members (e.g. social worker and counsellor). Five PBC items were included, for example, 'I believe that the training of teachers in my school is adequate to support inclusive education'.

Principals' behaviour regarding inclusive education (BEH – 10 items) was examined by such items as, 'The school makes its buildings physically accessible to students with SEN'. These items are not about individual behaviour, but collective practice or policy related to inclusion at school level. Given that the principal is the major determinant of those practices, their responses to this scale were expected to indicate the extent of their involvement in school practice in terms of inclusion. However, using proximal indicators rather than direct measures of behaviour, as well as intention, may have limitations that will be further discussed later.

Items were posed on a four-point Likert-type scale with available response options ranging from Strongly Disagree (1), through Disagree (2), Agree (3), to Strongly Agree (4). The survey forms were printed in (Cantonese) Chinese and required around 25 to 30 minutes for principals to answer all questions.

Data analysis

The data analysis involved two stages: Rasch analysis (Rasch, 1960) of the individual scales and path analysis to reveal the relationships among those variables. At the first stage, Rasch rating scale analysis using Winsteps 3.7 (Linacre, 2011) was used to examine the psychometric properties of the scales and to calibrate principals' (person) measures on each of the five latent traits, i.e. attitude (ATT), subject norm (SNS), perceived behaviour control (PBC), intention (INT), and behaviour (BEH). At the second stage, path analysis using AMOS 20 (Arbuckle, 2011) was adopted for exploring the relationships among the five latent traits and thereby testing the two substantive hypotheses. This approach for data analysis is a variation of, but different from, the conventional structural equation model (SEM). In conventional

SEM, there are two components: the measurement model which deals with the measurement of latent (unobserved) variables (normally using traditional analytical methods such as confirmatory factor analysis), and the structural model dealing with the relationships among those latent variables. In distinction, the approach utilised in this current study replaces factor analysis with Rasch analysis and then uses path analysis for the function of computing the structural model. The strengths of Rasch analysis in addressing assessment issues in education and social sciences have been well documented in the literature (Bond & Fox, 2007; Panayides, Robinson, & Tymms, 2010; Törmäkangas, 2011). The major reason for adopting Rasch analysis, rather than factor analysis, in the current study is that applying conventional analytical techniques (e.g. factor analysis) to raw ordinal data can lead to potentially misleading or confounding results (Bond & Fox, 2007; Wright, 1997). Those conventional analytical techniques require linear, interval scale data input (Wright, 1997), but raw data collected through Likert-type scales are merely ordinal since the response categories of Likert-type scales indicate ordering only without any proportional levels of meaning. In contrast, the Rasch model converts ordinal raw data into interval measures that have a constant interval meaning and provide objective and linear measurement from ordered category responses (Linacre, 2006). Such interval measures were then appropriately subjected to path analysis.

The criteria used to investigate the psychometric properties of the five scales included Rasch person/item reliability; item fit statistics; and the amount of variance explained by each of the scale measures. Rasch person reliability estimates the replicability of person-ordering along the latent trait scale, and Rasch item reliability indicates the predicted consistency of item placements along the latent trait scale if the same set of items was administered to another similar sample (Bond & Fox, 2007). Item fit statistics, including Outfit and Infit mean squares (MNSQ), are estimates of the extent to which the data match the measurement specifications of the Rasch model. The values of Outfit and Infit MNSQ range from 0 to positive infinity with 1.0 indicating (the unattainable) perfect fit to the Rasch model. In practice, values of Outfit and Infit MNSQ are usually different from 1.0. Researchers (for example, Linacre, 2006; Yan & Coniam, 2013) suggested that MNSQs falling in the range of 0.5 to 1.5 indicated a productive measurement with Likert-type response scales. This range is therefore generally taken as an acceptable indication of sufficient fit between data and model. Variance explained by Rasch measures refers to the proportion of variance in the observed data which can be explained by the item difficulties, person abilities and rating scale structures (Linacre, 2006). The higher the proportion of variance explained, the better prediction the Rasch model provides. Conversely, significant proportions of unexplained variance suggest the presence of competing measurement dimensions in the scale.

As suggested by Kline (1998), the fit statistics used in this study to check the model data fit in path analysis include chi-square (χ^2) and relative chi-square (χ^2/df), comparative fit index (CFI), the Tucker–Lewis Index (TLI), Standard root mean-square residual (SRMR), and the standardized root-mean-square error of approximation (RMSEA). As a general rule, χ^2/df less than 3.0 (Kline, 1998), GFI, CFI and TLI values greater than 0.90 (Garson, 2009), SRMR less than 0.08, and RMSEA less than 0.06 (Hu & Bentler, 1998, 1999) can be considered to be indications of good model fit.

Results

The results are presented from two complementary perspectives. First, the psychometric properties of the five scales assessing the five TPB components are investigated – from a Rasch measurement perspective – to ensure that the scales are psychometrically robust for use with the sample in the current study. Second, principals' Rasch-calibrated measures on the five scales are subjected to path analysis, aiming at addressing the main research question: to provide quantitative models of prediction and explanation of principals' intention and practice regarding inclusive education.

Rasch calibration of the five scales

The fit statistics of all participants were checked before calibrating items in scales, since underfitting persons (MNSQ fit statistics much higher than 1.0) are detrimental to calibrating a measurement scale (Bond & Fox, 2007). Data were excluded from the scale calibration if either the Outfit MNSQ or Infit MNSQ of the principal's measure was higher than 2.0. Following this principle, data from 11 cases were excluded when calibrating the ATT scale. The Rasch analysis based on the data from the remaining 198 cases identified item 21 (Students with physical disabilities should be included in regular classes) as showing misfit (both Infit and Outfit MNSQ being higher than 1.5) to the model. Consequently, only item 21 was removed from the scale, which resulted in a 26-item ATT scale in which all remaining items showed sufficient fit to the Rasch model for these exploratory purposes. The 26-item ATT scale shows good psychometric properties (Table 1): item reliability = 0.94, person reliability = 1.00, and 73.2% of variance is explained by ATT measures.

After excluding 16 misfitting cases, Rasch model calibration was conducted for the SNS scale; item 1 (The government believes that school should carry out inclusive education) appeared as misfitting (both Infit and Outfit MNSQ higher than 1.5) the model, and was removed from the scale. The remaining four SNS items fit the Rasch model well. The item reliability and person reliabilities for the four-item SNS scale are 0.83 and 0.99 respectively, and variance explained by measures is 71.6% (Table 1).

The Rasch calibration of PBC scale was conducted on the data set after 22 misfitting cases were excluded. The results showed that the Outfit MNSQ for item 5 (I believe that the training of professionals (e.g. social worker, counsellor, etc.) in my school is sufficient) was slightly larger than 1.5 (1.62). Given that professionals are important stakeholders involved in inclusive education and the Outfit MNSQ

Table 1. Psychometric properties of scales for measuring components of TPB.

Scale	Number of items		Rasch person reliability	Rasch item reliability	Variance explained by measures (%)
	Original scale	Final scale			
ATT	27	26	0.94	1.00	73.2
SNS	5	4	0.83	0.99	71.6
PBC	5	5	0.84	0.99	68.6
INT	6	6	0.87	0.99	70.7
BEH	10	9	0.84	0.97	50.6

indicates only marginal misfit, item 5 was retained. Table 1 shows that the five-item PBC scale has quite good psychometric properties (item reliability = 0.84; person reliability = 0.99; variance explained = 68.6%).

After 29 misfitting cases were identified in the INT data set, Rasch analysis based on the remaining cases found that all six items fit the Rasch model. The person and item reliabilities for INT scale are 0.87 and 0.99 respectively. Rasch measures explain 70.7% of variance in the data set.

The original BEH scale has 10 items. After a total of 24 misfitting cases were excluded for calibration of the scale, item 9 (The school is willing to admit students with a range of SEN) showed misfit to the model (Outfit MNSQ higher than 1.5). This item was, therefore, removed from the scale and the nine-item BEH scale showed acceptable psychometric properties (item reliability = 0.84; person reliability = 0.97; variance explained = 50.6%).

The category functioning of the five rating scales was examined to determine whether respondents used all response opportunities appropriately. Figure 2 presents the item characteristic curves for the four-category rating scales for each of the five scales. It can be seen that the threshold calibrations (the intersection point between consecutive categories) advance monotonically with category, indicating that higher performance categories correspond to higher measures of the latent trait; each category has a distinct peak in the figure indicating that each category emerges as a most probable response for a particular group of respondents. These results indicated that the four-category rating scale functioned well for each of the five scales.

Path analysis

After checking the psychometric properties of the scales and excluding the misfitting items, principals' Rasch measures on the five scales were computed and then subjected to path analysis. The fit statistics for all principals' measures were checked according to the rationale presented before, and principals' responses misfitting to the Rasch model (either the Outfit MNSQ or Infit MNSQ values were higher than 2.0) were excluded from the Rasch analyses (and, consequently, from the path analyses). This resulted in missing values (i.e. empty cells) in the data set of principals' scale measures. The percentage of missing data for the five scales ranged from 5.3% to 13.9%; Little's chi-square statistic (χ^2 = 62.127, df = 54, p = 0.209) showed that these values could be considered as missing completely at random (MCAR). Although conventional methods, like listwise deletion and pairwise deletion, can be used if the assumption of MCAR is met, Allison (2003) recommended maximum likelihood methods to handle missing data, especially for SEM, because parameter estimates produced by the maximum likelihood method are superior to those from conventional methods in terms of consistency, asymptotic efficiency, and asymptotic normality. This study, therefore, applied maximum likelihood methods with the expectation maximisation algorithm (Dempster, Laird, & Rubin, 1977) to impute missing data and the completed data set was then subjected to path analysis.

The fit statistics generated from the path analysis showed a quite good fit between the empirical data and the proposed TPB-based model. The chi-squared statistic (χ^2 = 2.705, df = 2) was not significant (p = 0.259). The relative chi-square (χ^2/df) of 1.353 was less than 3.0. The GFI (0.995), CFI (0.997) and TLI (0.987) indices were all higher than 0.9. RMSEA (0.041) was less than 0.6 and SRMR (0.018) was less than 0.8. These results, in general, supported that TPB provided an

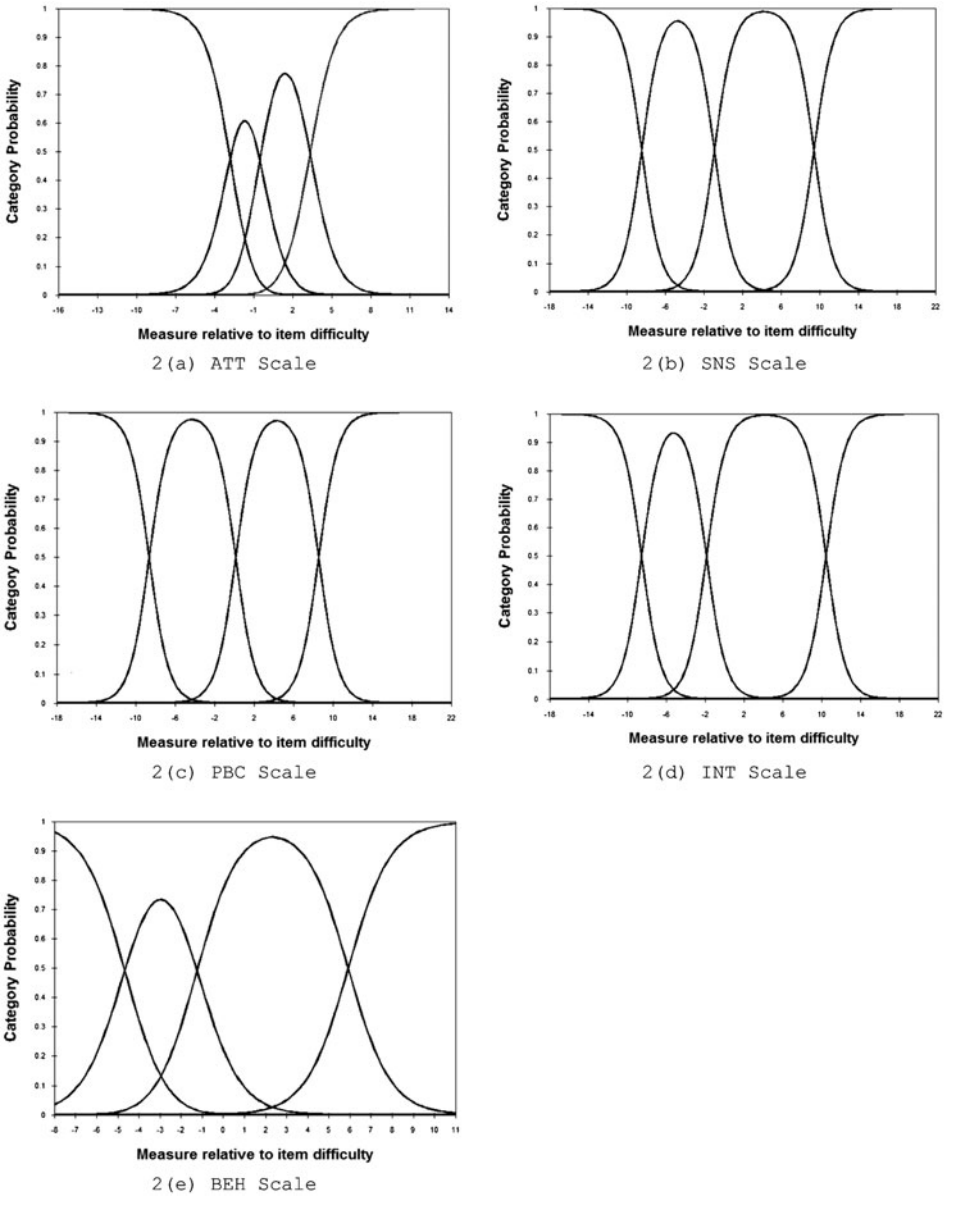

Figure 2. Item characteristic curves for the four-category rating scales.

appropriate framework for the explanation and prediction of Hong Kong principals' intentions and behaviour regarding inclusive education.

The relationships among the TPB components are presented in Figure 3. The correlations among the three intention predictors, i.e. ATT, SNS, and PBC, range from 0.16 to 0.47. The correlations are low to mid-sized, but significant. Standardized regression weights show that attitude was the strongest predictor of INT ($\beta = 0.42$, $p < 0.01$), followed by SNS ($\beta = 0.25$, $p < 0.01$), while PBC ($\beta = 0.10$, $p > 0.05$) predicted INT poorly. Approximately 38% of the variance of

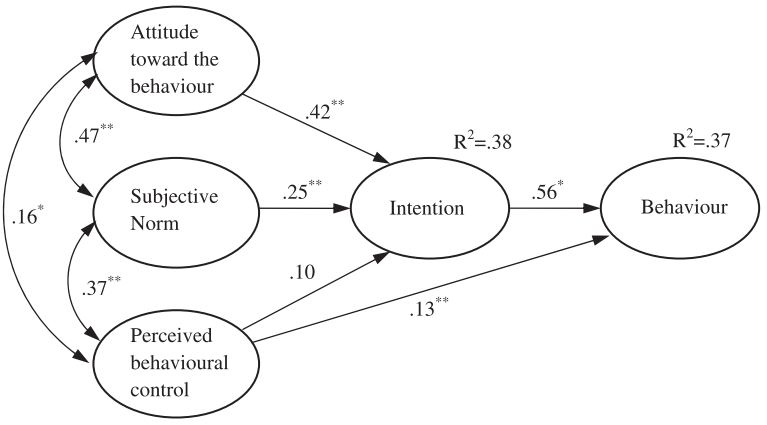

Figure 3. Standardised solution for the TPB-based structural model of principals' inclusion behaviour $^{**}p < 0.01$; $^{*}p < 0.05$.

INT was accounted for by the three intention predictors, ATT, SNS and PBC. Furthermore, both INT ($\beta = 0.56$, $p < 0.01$) and PBC ($\beta = 0.13$, $p < 0.05$) are significant predictors of BEH. INT had stronger predictive power on BEH than did PBC. INT and PBC together explained 37% of the variance in inclusive education BEH.

A direct effect in path analysis is routinely used to imply a causal relationship between two variables, while an indirect effect implies a causal relationship between two variables via a mediating variable. In the proposed model for the current study, there are direct effect paths from intention and perceived behaviour control to behaviour; and indirect effect paths from attitude, subjective norm, and perceived behaviour control to behaviour, mediated via intention. The effect coefficients are presented in Table 2.

Discussion

Despite the widely accepted rationale for inclusive education, and subsequent government policy statements, the readiness of education systems to accommodate students with SEN is not beyond question, and the educational rights of many students with SEN remain at risk (Armstrong, Armstrong, Lynch, & Severin, 2005; Conrad & Brown, 2011). In Hong Kong, a number of researchers have reported that school readiness is invariably the key to the success of inclusive practices (Sin & Law, 2012; Sin et al., 2013). It is well recognised that principals play a crucial role in optimising the school culture and instructional practice that can facilitate the

Table 2. Total, direct and indirect effects on principals' inclusion behaviour.

Variables	Direct effect	Indirect effect	Total effect
Attitude	–	0.24	0.24
Subjective norm	–	0.14	0.14
Perceived behaviour control	0.13	0.06	0.19
Intention	0.56	–	0.56

implementation of inclusive education (Conrad & Conrad, 2006; Gous, 2009; Stanovich & Jordan, 1998). However, due to different school cultures and practices in relationship to inclusion, it remains the case that poor management, negative attitudes and school rejection are identified as factors influencing failure to include children with SEN in Hong Kong schools (Forlin & Sin, 2010; Sin & Law, 2012; Sin et al., 2013). The purpose of this study is to make contributions to the understanding of principals' beliefs, intentions and practices regarding inclusive education by examining the extent to which TPB can predict and explain principals' intentions and practice of inclusion. Specifically, two research questions were addressed: Will principals' intentions to implement inclusive education be predicted by interrelated determinants including attitude, subjective norm and perceived behavioural control? And, will principals' inclusive education behaviour be predicted by intention and perceived behaviour control?

As illustrated by the results of the analyses, the two research questions were generally answered positively. The fit statistics indicated a good fit between the empirical data and the TPB-based model. This supports the contention that principals' attitudes, subjective norm and perceived behavioural control regarding inclusive education form their intentions to implement inclusive education; the intention, together with the perceived behavioural control, can then predict their inclusive education behaviour in the path model. All the predictive paths, except that from perceived behavioural control to intention, are statistically significant at the 0.05 or 0.01 level.

The results show that attitude is the strongest predictor of intention, and that subject norm is also a significant predictor. Perceived behavioural control, however, is found to be a poor and insignificant ($\beta = 0.10$, $p > 0.05$) predictor of intention. This order of the power of intention predictors is consistent with studies in other, diverse areas, which used TPB as the framework. For example, Hrubes, Ajzen, and Daigle (2001) reported that attitude was the strongest in predicting intention to hunt, followed by subjective norm and then perceived behavioural control. Omondi, Walingo, Mbagaya, and Othuon (2010) also found that attitude had stronger predictive power for predicting diabetics' intention to engage in physical activities than did subjective norm, while perceived behaviour control had no significant prediction. However, the findings are noticeably different from those reported in the Yan and Sin (2014) study of Hong Kong classroom teachers' intentions towards inclusive education where all three variables were significant predictors of intention. Yan and Sin (2014) found that subjective norm had the strongest power, followed by perceived behaviour control, and then attitude. It should be noted that school principals, in comparison with practitioners actually teaching students with SEN, might not frequently encounter the daily front-line practical difficulties in including with students with SEN. However, their exposure and insights on the issue may lead them to have an appropriate attitude and positive subjective norm regarding inclusion, which then impacts on their intentions and practices. Many successful cases of inclusive practices in Hong Kong substantiate the importance of building up the inclusive culture advocated by the school management (Sin, Hui, Ho, & Chan, 2004; Sin, Tsang, Poon, & Lai, 2010). In contrast, the autonomy of teachers in inclusive education was identified as relatively weaker (Equal Opportunities Commission, 2012). It is evident that they are obliged to follow the school policies and enact inclusive practices in their daily work. Social pressure, therefore, appears to be the strongest drive for them to implement inclusive education, while attitude, which probably

might benegatively influenced by the daily challenges of inclusive education, turned out to have less predictive power regarding teachers' intentions to implement inclusion education.

The current findings also reveal that both intention and perceived behavioural control are significant predictors of behaviour, but that intention has much stronger predictive power than does perceived behaviour control. This is similar to the findings of some previous studies (Hrubes, Ajzen, & Daigle, 2001; Omondi et al., 2010) where intention exhibited a stronger impact on behaviour than did perceived behaviour control but, again, this was different from the pattern for Hong Kong teachers (Yan & Sin, 2014) for whom perceived behaviour control exerted a larger effect on behaviour than intention. A likely explanation might be found in the different roles principals and teachers play in inclusive education. School principals play the role of leader, in leading the schools towards inclusive education. Without the principals' strong determination, schools will have difficulties in formulating school policy, building school culture and implementing good inclusive practices. But, principals do not necessarily confront the challenges of inclusive education in their routine work. Their inclusive practice is, therefore, more likely determined by intention rather than perceived behaviour control. Teachers, on the other side, play a front-line practitioner role in implementing inclusive education. Consequently, the degree of controllability (e.g. their perceptions of whether professional training for staff involved is adequate or not) is more central than is intention in predicting their actual practice.

From a methodology perspective, this study, in concert with that conducted by Yan and Sin (2014), furthers the application of TPB in studying inclusive education by investigating all components of the theory. Unlike much previous research in this field that that missed the behaviour component (for example, Batsiou et al., 2008; Campbell, 2010) or excluded the intention component (Kuyini & Desai, 2007), this study provides a more faithful application of TPB in the context of inclusive practice and offers a structural understanding of principals' intentions and behaviour regarding inclusive education. Furthermore, this study developed a set of scales appropriate for assessing principals' attitudes, subject norm, perceived behaviour control, intentions, and behaviour regarding inclusive education. The psychometric properties of those scales were examined from a Rasch measurement perspective and their utility was evident in the positive results. This set of scales could serve as a useful instrument for future research in this field.

One point warrants a special note and it may constitute the major limitation of this study. The intention scale and behaviour scale used in this study are different from those in many other studies applying TPB. This study used an indirect approach to assess principals' intentions to carry out inclusive practice since principals are not the front-line practitioners in classroom practices although they play an essential role in team leadership and policy implementation in the whole-school approach to inclusive practice. The intention scale used in this study is able to examine principals' expectations of teachers regarding inclusive practice. Although such expectations are supposed to reflect the extent of the principal's intentions to implement inclusive education, it is still not a direct intention measure. Similarly, the scale investigating principals' behaviour is not about their individual behaviour in terms of inclusive education, but collective practices or policies related to inclusion at the school level. In other words, the school inclusive practices or policies are treated as a proximal indicator of the principal's inclusion behaviour. Although principals'

responses to this scale are reasonably expected to indicate the extent of their involvement in school inclusion practice given that they are the major determinants, at the school level, of those practices or policies, it is true that this is different from the conventional conceptualisation of TPB. Alternatively, two different approaches that may generate more solid conclusions could be considered by future studies. One is to use a different theoretical framework to investigate the school-level inclusion practices, treating the principal as one of the stakeholders that has impact on such school-level practices. The other is to develop items, under the TPB framework, which can directly access principals' intentions and individual behaviour regarding inclusive education, such as 'I am willing to promote assessment adjustment in my school to ensure that inclusive education can take place' (intention), or 'I seek financial support to makes school buildings physically accessible to students with SEN' (behaviour). Furthermore, principals' perceived behaviour control is inferred from principals' views on the adequacy of professional training for the five categories of staff involved in inclusive education. Compared with items gauging principals' perceived behaviour control constructed based on the conventional conceptualisation, such as 'I believe that I have control on the inclusive practices in my school' or 'It is mostly up to me whether or not to promote inclusion in my school', the scale used in this study focused on one important aspect, i.e. the adequacy of professional training, rather than a general sense of perceived behaviour control. However, staff capacity and professional training is only one factor, among others, that affects inclusion in schools. Focusing on only one aspect may neglect the impact of other factors on principals' perceived behaviour control regarding inclusive practices. Given such limitations, generalisation of the findings of this study should be carried out with caution.

Inclusive education requires systematic changes both inside and outside schools. As Nind (2005) posited: 'The transformation of education into inclusive education requires reflection and action on social justice, beliefs about the learning potential of everybody, theories of good teaching and learning and a reconceptualisation of the curriculum and learning support.' Principals are supposed to execute a pivotal role in designing an inclusive curriculum, changing instructional practice and school culture, and coordinating resources during the implementation of inclusive education. The implications of this study should enlighten us further about strengthening principals' leadership and commitment in the whole-school approach to inclusion. The understanding of principals' intention and practice regarding inclusive education presented in this study is, therefore, expected to proffer a stepping-stone for those future investigations, particularly in the leadership training in inclusive practices. This has echoed the identified inadequacy in the territory-wide local report on inclusive practices (EOC, 2012).

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