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Pre-service Teachers' Attitudes Toward Students With Behavioral Difficulties: Associations With Individual and Education Program Characteristics

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Teachers' belief toward students with special educational needs (SEN) in the regular classroom is a condition that may influence the implementation of inclusive education. Nevertheless, some studies suggest that teachers' attitudes or self-efficacy beliefs toward students with behavioral difficulties (BD) are quite negative, but much less emphasis has been placed on the factors and mechanisms contributing to these attitudes. This study investigates associations between pre-service teachers' (PT) attitudes toward students with BD, PT's individual characteristics including self-efficacy beliefs, and PT's education program characteristics. Participants surveyed were 1,499 PT enrolled in a 4-year teacher education program (bachelor's degree) in Quebec Province, Canada. Descriptive analysis showed that PT's report generally positive attitudes toward students with BD on the three components of attitudes, while behavioral components were significantly more positive than the affective and cognitive components. Among the individual characteristics of PTs, the more advanced their academic level, the more negative their attitudes were on all three components. The characteristics related to the teacher education program (general vs. special) and the number of hours of courses on the BD revealed significant differences only on the cognitive component. Results of the mediation analysis further revealed that the association between the PT's characteristics and the three components of attitudes was mediated by PT's self-efficacy beliefs. Results are discussed considering their implications for the field of teacher education.

Keywords: behavioral difficulties, attitudes, initial teacher education program, self-efficacy beliefs, inclusion

INTRODUCTION

Inclusion of students with special educational needs (SEN) in mainstream schools and placement in the least restrictive environment, which first refers to the regular classroom, are encouraged through legislation worldwide (Jackson et al., 2018). Even in this context, students with behavioral difficulties (BD) are more likely to be placed in special education when compared with other students with SEN (Smith et al., 2015). Still, in comparison with students with SEN in terms of learning difficulties, several studies over time have shown that in-service and pre-service teachers' (PT) attitudes toward students with BD are more negative (Haq and Mundia, 2012; O'Toole and Burke, 2013; Markova et al., 2016; Scanlon et al., 2020; Jury et al., 2021). It is acknowledged that teachers' beliefs influence the success of inclusive education, particularly through the implementation of practices that are known to be effective. However, dealing with BD is a major concern for PT (Clarke et al., 2012), which is subsequently associated with attrition from the profession among beginning teachers (Martin et al., 2012). Considering such evidence, it is worth examining PT's attitudes during the initial teacher education program, which represents a meaningful period to prepare teachers for inclusive education and improve their attitudes toward it (Woodcock et al., 2012; Varcoe and Boyle, 2014). The study addresses a gap in the literature around PT's attitudes toward students with BD. Specifically, identifying the relationship between attitudes and other variables or factors involved during the teacher training process would provide leverage and guidance for designing training program targets, content, or methods.

THEORETICAL BACKGROUND

Attitudes Toward Inclusion

Attitudes toward inclusion refer to teachers' perception of teaching students presenting diverse needs in general education settings. PT entering the teaching profession with positive attitudes toward inclusive education are more likely to implement strategies that promote an inclusive paradigm in their classrooms (McCray and McHatton, 2011; Sharma et al., 2018). The tripartite attitude theory identifies three components: affective, cognitive, and behavioral (Eagly and Chaiken, 1993). The cognitive component refers to an individual's information, knowledge, and the benefits of integrating students with BD into regular classrooms. The affective component relates to the feeling of comfort or uneasiness felt by teachers about the school's inclusion of these students. The behavioral component corresponds to the teachers' desire to act to promote the inclusion of these students. From a socio-constructivist perspective, attitude development is a "learned process" influenced by contextual characteristics related to the environment, including teacher education and contact with students with diverse needs (Ahsan et al., 2012), as well as individual characteristics, such as self-efficacy (Miesera et al., 2019). PT enter education programs with beliefs about education which, if not challenged during their academic journey, can be difficult to change once they are in the field (Levin, 2015). Nevertheless, initial teacher training is a context in which beliefs, which inform attitudes, can be influenced (Varcoe and Boyle, 2014; Tangen and Beutel, 2017). However, as reported in the following, less attention has been paid to the factors and mechanisms that contribute to these attitudes toward inclusive education during teacher education programs, and no studies have been found specifically toward the inclusion of students with BD.

Influence of Pre-service Teachers' Individual Characteristics

Individual characteristics may refer to gender, age, year of study, or other variables related to beliefs. There is no consensus regarding the influence of gender on PT's attitudes toward inclusion. While studies have not observed significant differences by gender (Haq and Mundia, 2012; O'Toole and Burke, 2013; Sharma and Nuttal, 2016; Metsala and Harkins, 2020), others report that the female gender is associated with more positive attitudes (Forlin et al., 2009; Ahsan et al., 2012; Specht et al., 2016; Subban and Mahlo, 2017), and only one reported that male PT holds more positive attitudes (Opoku et al., 2021).

When PT's age is considered alone, it does not appear to have an impact on attitudes (O'Toole and Burke, 2013; Sharma and Nuttal, 2016). On the side of the year of study, its relationship with attitudes is inconsistent as it varies from one study to another. A cross-sectional study found that primary PT's attitudes were generally positive and strengthened across years of study (Goddard and Evans, 2018), while another study using the same research design found the opposite (Metsala and Harkins, 2020). Three studies report differences for training years according to the programs followed. A cross-sectional study (Cameron, 2017) and a longitudinal study (McHatton and Parker, 2013) found that attitudes improve only for PT in general education programs and not for PT in special education programs, while another longitudinal study found the opposite (Tournaki and Samuels, 2016).

Pre-service teachers' attitudes toward inclusion also appear to be positively associated with self-efficacy (Ahsan et al., 2012; O'Toole and Burke, 2013; Sharma and Sokal, 2015; Miesera et al., 2019; Opoku et al., 2021), but these associations have been less or not studied toward BD. Nonetheless, for in-service teachers, a high level of self-efficacy is associated with positive attitudes toward including students with SEN in school (Schaefer, 2010; Wright, 2013) and is even a predictor of willingness to include students with SEN in regular classrooms (Sharma et al., 2018). Teacher self-efficacy would also have a direct effect on the quality of the teaching strategies used in the classroom (Wright, 2013).

Influence of Pre-service Teachers' Contextual Characteristics

For this study, the contextual variables relevant to PT's are those related to their program of study. The type of teacher education program, which generally refers to an initial training program for general education or special education setting, seems to influence PT's attitudes. PT enrolled in special education programs held more positive attitudes than PT enrolled in general education

programs (McHatton and Parker, 2013; Tournaki and Samuels, 2016; Miesera et al., 2019; Jury et al., 2021). In addition, PT benefiting from courses common to the general and special education programs, PT from combined teacher education programs in which general education and special education teacher curricula were infused, had significantly more positive attitudes toward inclusion than PT from separate programs (Kim, 2011). Specific courses on inclusive education have generally a positive impact on attitudes (Kim, 2011; Oswald and Swart, 2011; Ahsan et al., 2012; Varcoe and Boyle, 2014; Sharma and Nuttal, 2016; Subban and Mahlo, 2017; Goddard and Evans, 2018; Klopfer et al., 2019; Song et al., 2019; Opoku et al., 2021). However, a cross-sectional study on PT's self-efficacy throughout the program years found that the specific content courses on inclusion appeared not to influence teachers' self-efficacy (Woodcock, 2011). Another study has shown that after a specific course on inclusion, PT became more worried about the reality of large classes sizes, their workload, and resources to support inclusive education (Oswald and Swart, 2011).

There is no consensus regarding the influence of the field experiment with students presenting SEN for PT. While some researchers found no association (O'Toole and Burke, 2013), others found that the field experiment is associated with more negative attitudes toward inclusion (Varcoe and Boyle, 2014). Varcoe and Boyle (2014) argued that PT's attitudes may be more influenced by their perceptions of matters of classroom practices, such as the availability of resources and support, rather than by any biases toward including students with special needs. In contrast, Weber and Greiner's (2019) study (2019) has revealed a low, but significant, positive relationship between positive experiences during teaching field experiments and attitudes toward inclusive education.

The implementation of inclusive education is influenced by teachers' attitudes and beliefs toward students with SEN, and some studies indicate that those latter vary according to individual and contextual variables. While attitudes and self-efficacy beliefs toward the inclusion of students with BD are often reported as negative, very few studies have examined the interrelationship between these and other individual variables during the context of the initial teacher education program, which represents a meaningful period to prepare for inclusive education (Woodcock et al., 2012; Varcoe and Boyle, 2014). It is important to understand PT's acquired attitudes toward inclusive education and how pre-service teacher education programs influence these attitudes (Kim, 2011; Woodcock et al., 2012). The results of the previously reported studies allow us to make two observations: the lack of specific studies for students with BD and the possible role of certain individual/contextual characteristics on attitudes in general. The lack of data on PT's attitudes toward the inclusion of students with BD and the mixed results of previous studies on PT's attitudes toward the inclusion of students with SEN indicate the need for further investigation of variables that influence PT's attitudes toward the inclusion of students with BD. Preparation for teaching in inclusive classrooms is a central objective of teacher education programs, and thus, attitudes toward inclusion are important to understand in PT teachers (Miesera et al., 2019). The results of such studies could provide useful data to those responsible for PT education programs to promote positive attitudes toward inclusive education of students with BD. Several results from previous studies appear contradictory and do not allow us to rule on the influence of personal and contextual characteristics that influence the attitudes of PT toward inclusion. These contradictions can be explained by various factors, in particular, the specificity of the instrument (one or multicomponent) and the designs used. Several studies use an attitude instrument with a single component, which prevents distinguishing results according to the different attitudinal components (affective, cognitive, or behavioral). Others have used a three-component instrument but do not analyze the influence of variables according to the attitudinal components. Most studies did not consider the interinfluence between variables (e.g., education programs, academic year, and self-efficacy).

RESEARCH QUESTIONS

This study attempts to address this situation, by investigating PT's attitudes toward the inclusion of students with BD, verifying their relations with individual and initial teacher education program characteristics, and examining the role of self-efficacy beliefs as a mediating factor between the latter and attitudes. It aims to answer the following three questions:

1. What are PT's attitudes toward the inclusion of students with BD?
2. What are the relations between PT's attitudes and PT's individual and education program characteristics?
3. What is the contribution of PT's individual and education program characteristics on the three components of attitude toward the inclusion of BD when mediated by self-efficacy beliefs?

MATERIALS AND METHODS

This study is a part of a broader project on the adoption of effective practices for the inclusion of students with BD in schools. To describe attitudes and explain their relationships with individual and program characteristics, the study adopts a descriptive-explanatory methodology. A quantitative survey and a cross-sectional design were used for this study, allowing suggestive results and avoiding some challenges of longitudinal studies (Cohen et al., 2018).

Participants

A total of 1,499 PTs (93.1% of women) were enrolled in a 4-year theoretical and practical preschool/elementary teacher education program (bachelor's degree) in general education (74.3%) or special education (25.7%) of three universities of the province of Quebec, Canada. The selection was based on the non-probability sampling method relying on the proximal effect through the accessibility of the research target environment (Williams and Protheroe, 2008). Thus, with the agreement of the solicited training program and trainers, a research assistant presented

research objectives to PT during a 2016–2017 scheduled activity and invited them to read the consent form approved by the ethics committee of the main researcher's institutional review board. For less than 30 minutes, those who did not wish to participate were free to continue their activities quietly in or out of the room, while those who voluntarily agreed answered the questionnaire. Based on the official program enrollment, the survey response rate was 60.41%, which includes participants who were withdrawn due to many missing data (n = 12) or outliers (n = 1). Their average age was 22. 35 years (SD = 2.81), and they were at their first (30.3%), second (28.8%), third (23.8%), or fourth (17.1%) training year. Depending on their program or their training years, the participants reported having completed a specific course on BD for several hours of 0 (20.3%), less than 30 (29.1%), more than 45 (34.2%), or more than 90 (16.4%), and having completed an average number of 52.29 (SD = 47.39) days of the field experiment.

Measures

Three questionnaires were used in this study. The socio-demographic questionnaire had seven questions to collect information about the individual (gender, training years, and age) or contextual characteristics (university, type of program, days spent in field experiment, and hours of specific courses on students with BD).

The second questionnaire used to measure self-efficacy for managing BD (independent variable) was taken from the original French version of the Teachers' Self-Efficacy Scale regarding classroom management (Gaudreau et al., 2015). The subscale consisted of nine items (e.g., I can efficiently manage the situation when one of my students adopts provocative behavior; $\alpha^1 = 0.89$).

The third questionnaire used to measure PT attitudes (dependent variable) was the Multicomponental Attitudes Toward Inclusive Education Scale (MATIES; Mahat, 2008), which was translated into French according to the back translation procedure, adapted to specifically address students with BD, and validated by confirmatory analyses (refer to preliminary analysis). The scale consisted of 18 items equivalently separated into 3 subscales measuring a component of attitudes: cognitive (e.g., I believe that students with BD should be taught in a special classroom; $\alpha^1 = 0.75$), affective (e.g., I am uncomfortable including students with BD in my classroom with other students without difficulties; $\alpha^1 = 0.80$), and behavioral (e.g., I am willing to encourage students with BD to participate in all social activities in the regular classroom; $\alpha^1 = 0.89$). Its validity in terms of internal structure was checked and confirmed for each subscale/factor based on the scores of this sample, and the fit quality of the instrument is considered good given the large size of this sample (Hu and Bentler, 1999; Kline, 2016): cognitive scale ($\chi^2[5] = 25.11$, $p < 0.001$; comparative fit index (CFI) = 0.99; root mean square error of approximation (RMSEA) = 0.05); affective ($\chi^2[5] = 17.54$, $p < 0.01$; CFI = 1.00; RMSEA = 0.04); behavioral ($\chi^2[6] = 28.13$, $p < 0.001$; CFI = 1.00; RMSEA = 0.05).

For the last two questionnaires, participants were asked to indicate the degree to which they agreed or disagreed with each statement on a 6-point Likert-type rating scale from 1 (strongly disagree) to 6 (strongly agree). The score for each scale was calculated based on the average obtained for its component statements.

Procedure

The ethical certificate was obtained from the main researcher's institutional review board prior to the study. Teacher trainers from three francophone universities (Quebec, Canada) offering an initial teacher education program in preschool and primary education during the academic year 2016–2017 were contacted to allow researchers the possibility of presenting the study to their students at the end of a class period. Participants were assured that their contribution was voluntary, anonymous, and confidential. They were informed that they could complete all or part of the survey and withdraw at any time.

Plan of Analysis

Preliminary analyses examined the presence of missing data, normality of distribution for all the dependent variables (attitude components), and extreme values. To obtain a portrait of PT on the three components of attitudes (question 1) and their relationship with individual characteristics, including self-efficacy beliefs, and teacher education program characteristics (question 2), descriptive analyses were carried out on averages, SDs, correlations, and paired t-tests between each of the scales. These first statistical analyses were carried out using IBM SPSS Statistics software version 24.

To further examine the contribution of individual and contextual (program) characteristics on the three components of attitude mediated by self-efficacy beliefs, the structural equation modeling (SEM) was performed (question 3). To reduce the complexity of the model, the choice of variables introduced was based on the scientific literature and aims (Field, 2018). Therefore, the gender dichotomous variable is not included because the inequality between the two subgroups is greater than 90 and 10% (Tabachnick and Fidell, 2019), while the dependent variables of the model are previously controlled on the age and university affiliation variables. The premises of error distribution normality, homoscedasticity, and the absence of multicollinearity between the independent variables are, respectively, validated by the Durbin-Watson statistic, the homogeneity of the variances of the residuals, and the variance inflation factor. SEM of the Mplus (version 7.4) statistical software, according to the bootstrap method with 2,000 repetitions, was used. For each mediation link (indirect effect), a confidence interval was calculated to confirm its significance according to the resampling procedure. If the value of "0" is excluded from the confidence interval, it is concluded that mediation is significant. The validity criteria of Hu and Bentler (1999) were used to validate the model tested (root mean square error of approximation [RMSEA] < 0.08, comparative fit index [CFI] > 0.90), except for the chi-square indicator, which easily converges to significance with large sample ($n > 200$), as in this case (Kline, 2016).

RESULTS

Preliminary Analysis

Data were examined for normal distribution. Since the age variable has a flattening coefficient greater than the cutoff point of three (Tabachnick and Fidell, 2019), the necessary modifications have been made by truncating the extreme data at the limit value located at three SDs from the mean. A preliminary analysis indicated that 1.04–1.11% of the data were missing for the attitude variables, 1.82% of the data were missing for the self-efficacy variables, and between 0 and 3% of the data were missing for the sociodemographic variables. Considering their low rate, missing data were replaced with the variable mean (Tabachnick and Fidell, 2019).

Attitudes Toward the Inclusion of Students With Behavioral Difficulties

The means and SDs for the three components of attitude variables are presented in **Table 1**. All variables reveal that the obtained scores are higher than the central limit of the respective scales. Each attitude component score differs significantly from the others, as determined by paired *t*-tests followed by Bonferroni's tests at a 0.05/3 significance level. Among them, cognitive attitude score is lowest compared with affective [$t(1498) = -8.42$, $p < 0.001$] and behavioral [$t(1498) = -27.65$, $p < 0.001$] attitudes, while affective are lower than behavioral [$t(1498) = -16.77$, $p < 0.001$].

Relation Between Attitudes and Individual and Contextual Characteristics

Correlation analyses (**Table 2**) indicate a weakly significant relationship between the three attitude scales and the training program, the training years, and the field experiment. The results also show a weak negative relationship between cognitive and affective attitudes and age, as well as between cognitive attitudes and the number of hours of course content specific to BD. For self-efficacy, the results point to a weak positive relationship with cognitive attitudes and a moderate association with affective and behavioral attitudes.

As for the variables referring to the course content on BD and the number of days of the field experiment, they were excluded from the subsequent analyses since the first is not significantly correlated with the dependent variables after Bonferroni's correction, while the second is strongly correlated with the training years of study (**Table 2**).

Contribution of Pre-service Teachers' Individual and Education Program Characteristics on Attitudes Mediated by Self-Efficacy Beliefs

The model tested (**Figure 1**) adheres to the statistical fit indices recommended by Hu and Bentler (1999) and exhibits good data consistency. Self-efficacy contributes significantly but partially as a mediator in the mechanism of the relationship between the type of program and the three components of attitudes. In fact, the type of program also had a significant direct effect on the three components of attitudes. For the cognitive component, the results of the model showed a direct negative association with the type of program, and a positive indirect association of the self-efficacy beliefs between the latter. In other words, results suggested that PT enrolled in special education programs reported more negative attitudes toward the inclusion of students with BD, but that a high self-efficacy belief mediates a positive relationship between the type of program and positive cognitive attitudes. On their parts, the affective and behavioral components of attitudes are both positively and significantly related to the type of program (direct effect) and the mediator of self-efficacy beliefs (indirect effect). For the training years independent variable, the direct and indirect effects of the model tested showed, respectively, a significant and negative association with all three components of attitudes, but no significant mediation mechanism by self-efficacy was observed. The percentage of variance explained by the model for each component of attitude is modest (cognitive = 11%; affective = 12%; behavioral = 12%), whereas a small proportion of variance was explained by self-efficacy beliefs (refer to indirect effects, **Figure 1**).

DISCUSSION

Unlike most studies identified (Forlin et al., 2009; Haq and Mundia, 2012; O'Toole and Burke, 2013; Scanlon and Barnes-Holmes, 2013), PT's attitudes toward the inclusion of students with BD were found to be globally somewhat positive. These results may be explained by the current educational situation, which values inclusive education and the acceptance of all students in regular classes.

Behavioral attitudes were significantly more positive than affective and cognitive ones. Cognitive attitudes are neutral. PT's positive behavioral attitudes suggest their willingness to support BD students' inclusion. This result is somewhat surprising, considering that based on the theory of planned behavior, cognitive and affective attitudes should play a predictive role on behavioral ones (conation) (Ajzen, 2012).

Regarding the influence of the type of teacher education program, it was discovered that PT enrolled in the general teacher education program had better cognitive attitudes than those in the special education program. Despite the fact that the latter had more course hours devoted to characteristics or intervention with students with BD, they seem to hold a weaker belief in the benefits of inclusion for these students in a regular classroom. In contrast, results suggest that the special education program would be better suited to enhance the experience to teach students with BD. These findings suggest that there are benefits to increasing the number of hours of specific courses on students with BD in general education programs or that their methods need to be redesigned, e.g., by planning educative experiences where PT might be in positive contact with students with BD. Otherwise, PT in special education programs chooses to work

TABLE 1 | Descriptive statistics for the three components of attitudes (dependent variable; DV) and self-efficacy beliefs for managing BD (mediating variable; MV) (*N* = 1,499).

Variables	Cognitive	Affective	Behavioral	Self-efficacy
Mean	4.61*	4.78*	5.11*	4.20
Standard deviation	0.70	0.71	0.67	0.73
Skewness	−0.62	−0.73	−0.62	−0.17
Kurtosis	1.10	1.53	−0.04	0.52

*Likert-type rating scale = 1 (strongly disagree) to 6 (strongly agree). *All scores of attitude components differed significantly from each other (paired t-test).*

TABLE 2 | Pearson correlations between individual and program characteristics and attitudes toward BD variables.

Variables	2	3	4	5	6	7	8	9
Age	0.01[a]	0.50***[a]	0.32***[a]	0.46***[a]	0.08**	−0.07***	−0.08***	−0.05
Teacher education program[a]	–	−0.06*	0.16***	0.00	0.13***	−0.08**	0.14***	0.18***
Training years[a]	–	–	0.46***	0.86***	−0.01	−0.15***	−0.14***	−0.12***
Courses on BD[a]	–	–	–	0.56***	0.17***	−0.08**	−0.02	−0.02
Field experiment[a]	–	–	–	–	0.05	−0.16***	−0.11***	−0.12***
Self-efficacy	–	–	–	–	–	0.12***	0.31***	0.32***
Cognitive attitudes	–	–	–	–	–	–	0.43***	0.49***
Affective attitudes	–	–	–	–	–	–	–	0.40***
Behavioral attitudes	–	–	–	–	–	–	–	–

*Pre-service teacher education program coded as general = 0, special = 1. Courses on BD = hours. Field experiment = days. [a]Ordinal variables justifying the use of rho of Spearman correlation, *p < 0.05, **p < 0.01, ***p < 0.001. 1 Ordinal coefficient alpha calculated from this sample study.*

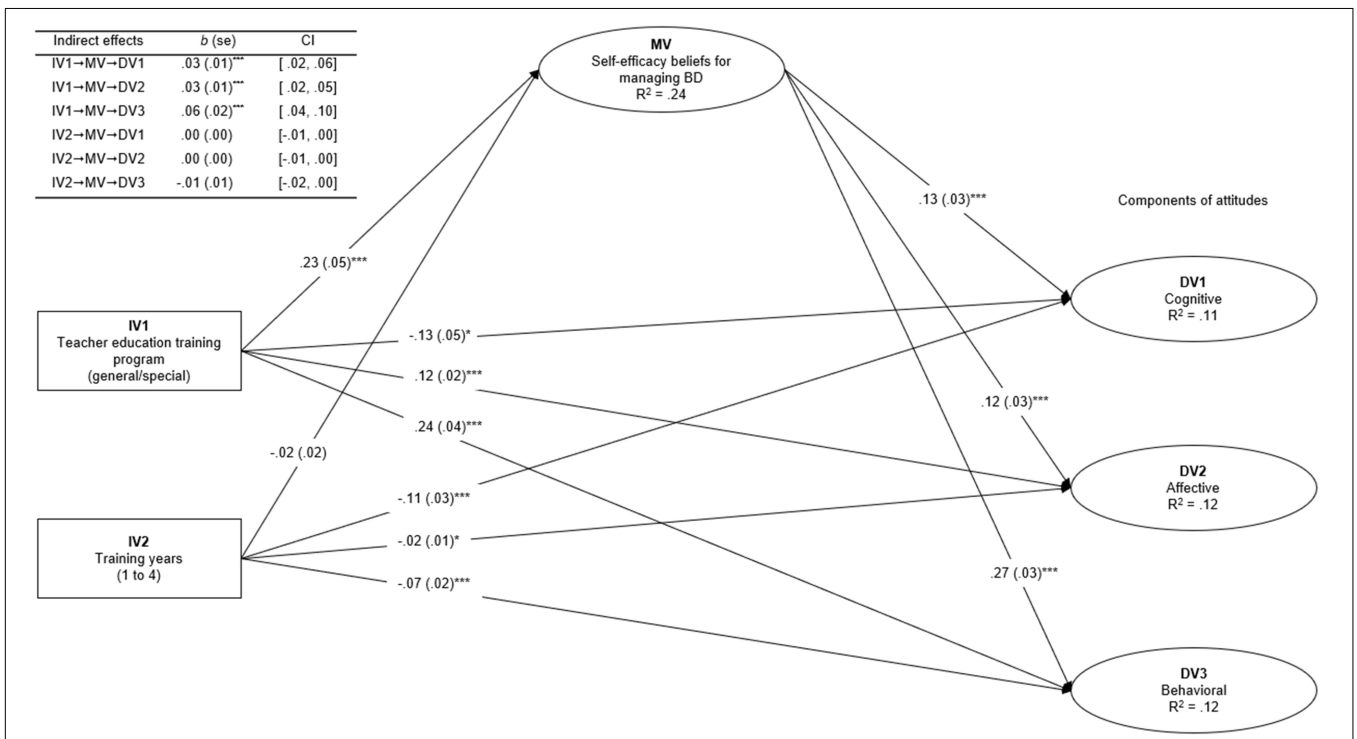

FIGURE 1 | Model pre-service teacher's training years and education program as predictors of the three components of attitudes toward students with BD, mediated by self-efficacy beliefs. Note: *Estimated coefficients (b) for Model and their standard errors ([se]in parentheses). Latent constructs are shown in ellipses, and observed variables are shown in rectangles, *p < 0.05, ***p < 0.001. χ^2(207, N = 1,499) = 1016.71 p < 0.00; comparative fit index = 0.92; mean square error of approximation = 0.05. CI, confidence interval; IV, independent variable; MV, mediating variable; DV, dependent variable. Teacher education training program coded as general = 0, special = 1. Training years = 1, 2, 3, 4.*

with students with SEN, which could explain more positive affective and behavioral attitudes on their part as soon as they enter the program.

Course content on BD did not positively influence attitudes, in general, but negatively influenced cognitive attitudes. This is congruent with results presented by Lee et al. (2015), suggesting teacher training did not influence teacher's support of including students with attention-deficit/hyperactivity disorder but influenced the support for other students with difficulties. It is possible that the more the PT knows about BD, the more they perceive the difficulties linked to the inclusion of these students and the less they feel confident in meeting their needs (Ohan et al., 2008). Several courses on BD should focus not only on knowledge about the characteristics and needs of students but also on meaningful but practical ways to support them (Scanlon and Barnes-Holmes, 2013; Klopfer et al., 2019).

However, it is of great concern to see a decline in these attitudes over the training years. These results are in contrast to those of Goddard and Evans (2018), who indicated that PT's attitudes toward inclusion strengthened across the years of study. From a methodological perspective, this may be due to the measurement instrument used that, in their studies, were not specific to BD students but rather to students with SEN. From an interpretive perspective, however, the deterioration in attitudes toward BD students over the years of training may be associated with the reality of a field experiment. In fact, as practicum experience increased the PT's awareness of the difficulties and complexities, they might increasingly face the challenges of having to diversify their inclusive practices without sufficient resources to support such an approach and the workload demands associated with inclusion (Woodcock et al., 2012; Varcoe and Boyle, 2014; Metsala and Harkins, 2020). While Ahmmed et al. (2012) suggested that experience influences positively attitudes only if it is a success, the present results raise questions about the methods, contents, and field experiment inherent in the type of program. In particular, teacher education programs need to consider practicum placements in schools and classrooms where inclusion has been embraced as a philosophy and practice, and where appropriate supports exist to help ensure a successful experience for PT (Short and Bullock, 2013; Coates et al., 2020). In addition, as suggested by Metsala and Harkins (2020), monitoring students' inclusive orientation as they progress through their programs seems important, as students farther along in their program endorsed more negative attitudes. Discussions on this subject could be led by supervisors, particularly during field experiment seminars.

Given the heterogeneous population of PT upon entry to an education program, it has already been recommended in the literature that teacher education programs should offer a differentiated pathway based on the varied characteristics of PT, such as their previous experiences, specific needs, and demographic needs (Forlin et al., 2009; Varcoe and Boyle, 2014). Considering the impact of their differences in attitudes toward inclusion, the results of this study seem to support this suggestion and enrich it by pinpointing the role of self-efficacy as another characteristic to consider when addressing BD in the classroom.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The small proportion of variance explained by the model suggests that other variables than those studied can influence attitudes. Future studies should focus on identifying other variables that can explain attitudes to better guide teacher education programs. It would also be relevant to check whether the knowledge acquired during the teacher education program can help explain the attitudes of future teachers. In addition, it would be relevant to measure the influence of the theoretical and practical aspects of teacher education programs on the mobilization of effective practices with students with BD. Furthermore, the cross-sectional design used does not allow causal links to be established on the trajectory of the attitudes of future teachers, which deserves to be validated by longitudinal models. In addition, there could well be differences across PT cohorts that are not reflected in these results but would be identified in a longitudinal, prospective study (Woodcock, 2011). Moreover, self-reported questionnaires are sensitive to certain biases, including social desirability and the tendency to respond randomly (Hogan, 2019), which could have positively influenced the portrait of attitudes. Finally, in future research, it would be relevant to conduct focus groups with PT of different years of study to deepen the elements that negatively or positively influence their attitudes toward the school the inclusion of students with BD.

CONCLUSION

Although global attitudes of PT toward inclusion are relatively more positive than negative and PT self-reports about behavioral attitudes suggest their willingness to support BD students' inclusion, results on other aspects of attitudes raise some questions about PT needs for cognitive and affective support in the process of inclusive education of students with BD. Our results seem to indicate that PT's attitudes may be influenced more so by their perceptions of matters relating to classroom management than by any biases toward including students with special needs in regular classrooms. Results suggest a need for a teacher education program to address more explicitly issues about inclusive settings, resourcing, and support, by providing PT more concrete tools to meet BD students' needs and by using university pedagogical methods that promote the integration of knowledge into practice (e.g., experiential learning).

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Comité d'Éthique de la Recherche, Université

de Sherbrooke. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors are responsible for the research reported here, participated in the concept and design, analysis and interpretation of data, and drafting or revising of the manuscript, approved the manuscript as submitted, and agreed to be accountable for all aspects of the study.

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REFERENCES

Ahmmed, M., Sharma, U., and Deppeler, J. (2012). Variables Affecting Teachers' Attitudes towards Inclusive Education in Bangladesh. *J. Res. Spec. Educ. Needs* 12, 132–140. doi: 10.1111/j.1471-3802.2011.01226.x

Ahsan, M. T., Sharma, U., and Deppeler, J. M. (2012). Exploring Pre-Service Teachers' Perceived Teaching-Efficacy, Attitudes and Concerns about Inclusive Education in Bangladesh. *Int. J. Whole Sch.* 8, 1–20. doi: 10.1080/08856257.2021.1873524

Ajzen, I. (2012). "The Theory of Planned Behavior," in *Handbook of theories of social psychology*, eds P. A. M. Van Lange, A. W. Kruglanski, and E. T. Torry (Los Angeles, CA: Sage), 438–459.

Cameron, D. L. (2017). Teacher Preparation for Inclusion in Norway: a Study of Beliefs, Skills, and Intended Practices. *Int. J. Incl. Educ.* 21, 1028–1044. doi: 10.1080/13603116.2017.1326177

Clarke, M., Lodge, A., and Shevlin, M. (2012). Evaluating Initial Teacher Education Programmes: perspectives from the Republic of Ireland. *Teach. Teach. Educ.* 28, 141–153. doi: 10.1016/j.tate.2011.08.004

Coates, J. K., Harris, J., and Waring, M. (2020). The Effectiveness of a Special School Experience for Improving Preservice Teachers' Efficacy to Teach Children with Special Educational Needs and Disabilities. *Br. Educ. Res. J.* 46, 909–928. doi: 10.1002/berj.3605

Cohen, L., Manion, L., and Morrison, K. (2018). *Research Methods in Education*. New York: Routledge.

Eagly, A. H., and Chaiken, S. (1993). *The Psychology of Attitudes*. Fort Worth: Harcourt Brace Jovanovich College Publishers.

Field, A. P. (2018). *Discovering Statistics Using IBM SPSS*. New York: Sage.

Forlin, C., Loreman, T., Sharma, U., and Earle, C. (2009). Demographic differences in changing pre-service teachers' attitudes, sentiments and concerns about inclusive education. *Int. J. Incl. Educ.* 13, 195–209. doi: 10.1080/13603110701365356

Gaudreau, N., Frenette, É, and Thibodeau, S. (2015). Élaboration de l'Échelle du sentiment d'efficacité personnelle des enseignants en gestion de classe (ÉSEPGC) [Development of the Teachers' Self-efficacy in Classroom Management Scale]. *Mes. Éval. Éduc.* 38, 31–60. doi: 10.7202/1036762ar

Goddard, C., and Evans, D. (2018). Primary Pre-Service Teachers' Attitudes towards Inclusion Across the Training Years. *Aust. J. Teach. Educ.* 43, 121–142. doi: 10.14221/ajte.2018v43n6.8

Haq, F. S., and Mundia, L. (2012). Comparison of Brunei Preservice Student Teachers' Attitudes to Inclusive Education and Specific Disabilities: implications for Teacher Education. *J. Educ. Res.* 105, 366–374. doi: 10.1080/00220671.2011.627399

Hogan, T. T. (2019). *Psychological Testing: a Practical Introduction*. Hoboken: Wiley.

Hu, L., and Bentler, P. M. (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: conventional Criteria Versus New Alternatives. *Struct. Equ. Modeling* 6, 1–55. doi: 10.1080/10705519909540118

Jackson, L., Fitzpatrick, H., Alazemi, B., and Rude, H. (2018). Shifting Gears: re-framing the International Discussion about Inclusive Education. *J. Int. Spec. Needs Educ.* 21, 11–22. doi: 10.9782/2159-4341-21.2.01

Jury, M., Perrin, A.-L., Rohmer, O., and Desombre, C. (2021). Attitudes Toward Inclusive Education: an Exploration of the Interaction Between Teachers' Status and Students' Type of Disability Within the French Context. *Front. Educ.* 6:655356. doi: 10.3389/feduc.2021.655356

Kim, J. R. (2011). Influence of Teacher Preparation Programmes on Preservice Teachers' Attitudes toward Inclusion. *Int. J. Incl. Educ.* 15, 355–377. doi: 10.1080/13603110903030097

Kline, R. B. (2016). *Principles and Practice of Structural Equation Modeling*. New York, NY: Guilford Press.

Klopfer, K. M., Scott, K., Jenkins, J., and Ducharme, J. (2019). Effect of Preservice Classroom Management Training on Attitudes and Skills for Teaching Children with Emotional and Behavioral Problems: a Randomized Control Trial. *Teach. Educ. Spec. Educ.* 42, 49–66. doi: 10.1177/0888406417735877

Lee, F. L. M., Yeung, A. S., Tracey, D., and Barker, K. (2015). Inclusion of Children with Special Needs in Early Childhood Education: what Teacher Characteristics Matter. *Top. Early Child. Spec. Educ.* 35, 79–88. doi: 10.1177/0271121414566014

Levin, B. B. (2015). "The development of teachers' beliefs," in *International Handbook of Research on Teachers' Beliefs*, eds H. Fives and M. G. Gill (New York: Routledge), 48–65.

Mahat, M. (2008). The Development of a Psychometrically-Sound Instrument to Measure Teachers' Multidimensional Attitudes toward Inclusive Education. *Int. J. Spec. Educ.* 23, 82–92.

Markova, M., Pit-Ten Cate, I., Krolak-Schwerdt, S., and Glock, S. (2016). Preservice Teachers' Attitudes toward Inclusion and toward Students with Special Educational Needs from Different Ethnic Backgrounds. *J. Exp. Educ.* 84, 554–578. doi: 10.1080/00220973.2015.1055317

Martin, N. K., Sass, D. A., and Schmitt, T. A. (2012). Teacher Efficacy in Student Engagement, Instructional Management, Student Stressors, and Burnout: a Theoretical Model Using In-class Variables to Predict Teachers' Intent-to-leave. *Teach. Teach. Educ.* 28, 546–559. doi: 10.1016/j.tate.2011.12.003

McCray, E. D., and McHatton, P. A. (2011). "Less Afraid to Have Them in My Classroom": understanding Pre-Service General Educators' Perceptions about Inclusion. *Teach. Educ. Q.* 38, 135–155.

McHatton, P. A., and Parker, A. (2013). Purposeful Preparation: longitudinally Exploring Inclusion Attitudes of General and Special Education Pre-service Teachers. *Teach. Educ. Spec. Educ.* 36, 186–203. doi: 10.1177/0888406413491611

Metsala, J. L., and Harkins, M. J. (2020). An Examination of Preservice Teachers' Self-Efficacy and Beliefs About Inclusive Education. *Teach. Educ. Spec. Educ.* 43, 178–192. doi: 10.1177/0888406419873060

Miesera, S., DeVries, J. M., Jungjohann, J., and Gebhardt, M. (2019). Correlation between Attitudes, Concerns, Self-efficacy and Teaching intentions in Inclusive Education Evidence from German Pre-service Teachers Using International Scales. *J. Res. Spec. Educ. Needs* 19, 103–114. doi: 10.1111/1471-3802.12432

Ohan, J. L., Cormier, N., Hepp, S. L., Visser, T. A. W., and Strain, M. C. (2008). Does Knowledge about Attention-Deficit/Hyperactivity Disorder Impact Teachers' Reported Behaviors and Perceptions? *Sch. Psychol. Q.* 23, 436–449. doi: 10.1037/1045-3830.23.3.436

Opoku, M. P., Nketsia, W., Odame, L., and Agyei-Okyere, E. (2021). Predictors of the Attitudes of Preservice Teachers Toward Teaching Students with Down Syndrome in Regular Schools in Ghana. *J. Policy Pract. Intellect. Disabil.* 18, 229–239. doi: 10.1111/jppi.12379

Oswald, M., and Swart, E. (2011). Addressing South African Pre-service Teachers' Sentiments, Attitudes and Concerns Regarding Inclusive Education. *Int. J. Disabil. Dev. Educ.* 58, 389–403. doi: 10.1080/1034912X.2011.626665

O'Toole, C., and Burke, N. (2013). Ready, Willing and Able? Attitudes and Concerns in Relation to Inclusion Amongst a Cohort of Irish Pre-service Teachers. *Eur. J. Spec. Needs Educ.* 28, 239–253. doi: 10.1080/08856257.2013.768451

Scanlon, G., and Barnes-Holmes, Y. (2013). Changing Attitudes: supporting Teachers in Effectively Including Students with Emotional and Behavioural Difficulties in Mainstream Education. *Emot. Behav. Diffic.* 18, 374–395. doi: 10.1080/13632752.2013.769710

Scanlon, G., McEnteggart, C., and Barnes-Holmes, Y. (2020). Attitudes to Pupils with EBD: an Implicit Approach. *Emot. Behav. Diffic* 25, 111–124. doi: 10.1080/13632752.2020.1729609

Schaefer, J. (2010). *Impact of Teacher Efficacy on Teacher Attitudes toward Classroom Inclusion*. Ph.D. thesis. Minnesota: Capella University

Sharma, U., Aiello, P., Pace, E. M., Round, P., and Subban, P. (2018). In-service Teachers' Attitudes, Concerns, Efficacy and Intentions to Teach in Inclusive Classrooms: an International Comparison of Australian and Italian Teachers. *Eur. J. Spec. Needs Educ.* 33, 437–446. doi: 10.1080/08856257.2017.1361139

Sharma, U., and Nuttal, A. (2016). The Impact of Training on Pre-service Teacher Attitudes, Concerns, and Efficacy towards Inclusion. *Asia Pac. J. Teach. Educ.* 44, 142–155. doi: 10.1080/1359866x.2015.1081672

Sharma, U., and Sokal, L. (2015). The Impact of a Teacher Education Course on Pre-service Teachers' Beliefs about Inclusion: an International Comparison. *J. Res. Spec. Educ. Needs* 15, 276–284. doi: 10.1111/1471-3802.12043

Short, M. N., and Bullock, L. M. (2013). Perspectives on Select Field-based Experiences for Pre-service Teachers of Students with Emotional and Behavioural Disorders. *Emot. Behav. Diffic.* 18, 396–406. doi: 10.1080/13632752.2013.793473

Smith, C. R., Katsiyannis, A., Losinski, M., and Ryan, J. B. (2015). Eligibility for Students with Emotional or Behavioral Disorders: the Social Maladjustment Dilemma Continues. *J. Disabil. Policy Stud.* 25, 252–259. doi: 10.1177/1044207313513641

Song, J., Sharma, U., and Choi, H. (2019). Impact of Teacher Education on Pre-service Regular School Teachers' Attitudes, Intentions, Concerns and Self-efficacy about Inclusive Education in South Korea. *Teach. Teach. Educ.* 86:102901. doi: 10.1016/j.tate.2019.102901

Specht, J., McGhie-Richmond, D., Loreman, T., Mirenda, P., Bennett, S., Gallagher, T., et al. (2016). Teaching in Inclusive Classrooms: efficacy and Beliefs of Canadian Preservice Teachers. *Int. J. Incl. Educ.* 20, 1–15. doi: 10.1080/13603116.2015.1059501

Subban, P., and Mahlo, D. (2017). My Attitude, my Responsibility' Investigating the Attitudes and Intentions of Pre-service Teachers toward Inclusive Education Between Teacher Preparation Cohorts in Melbourne and Pretoria. *Int. J. Incl. Educ.* 21, 441–461. doi: 10.1080/13603116.2016.1197322

Tabachnick, B. G., and Fidell, L. S. (2019). *Using Multivariate Statistics*. Boston: Pearson.

Tangen, D., and Beutel, D. (2017). Pre-service Teachers' Perceptions of Self as Inclusive Educators. *Int. J. Incl. Educ.* 21, 63–72. doi: 10.1080/13603116.2016.1184327

Tournaki, N., and Samuels, W. E. (2016). Do graduate Teacher Education Programs Change Teachers' Attitudes toward Inclusion and Efficacy Beliefs? *Action Teach. Educ.* 38, 384–398. doi: 10.1080/01626620.2016.1226200

Varcoe, L., and Boyle, C. (2014). Pre-service Teachers' Attitudes towards Inclusive Education. *Educ. Psychol.* 34, 323–337. doi: 10.1080/01443410.2013.785061

Weber, K. E., and Greiner, F. (2019). Development of Pre-service Teachers' Self-efficacy Beliefs and Attitudes towards Inclusive Education Through First Teaching Experiences. *J. Res. Spec. Educ. Needs* 19, 73–84. doi: 10.1111/1471-3802.12479

Williams, A., and Protheroe, N. (2008). *How to Conduct Survey Research: A Guide for Schools*. Alexandria, VA: Educational Research Service.

Woodcock, S. (2011). A Cross-sectional Study of Pre-service Teacher Efficacy Throughout the Training Years. *Aust. J. Teach. Educ.* 36, 23–34. doi: 10.14221/ajte.2011v36n10.1

Woodcock, S., Hemmings, B., and Kay, R. (2012). Does Study of an Inclusive Education Subject Influence Pre-service Teachers' Concerns and Self-efficacy about Inclusion? *Aust. J. Teach. Educ.* 37, 1–11. doi: 10.14221/ajte.2012v37n6.5

Wright, H. D. (2013). *The Relation between High School Teacher Sense of Teaching Efficacy and Self-reported Attitudes toward the Inclusive Classroom Settings*. Ph.D. thesis. Virginia: Liberty University

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