



Pre-service teachers' beliefs and other predictors of pupil control ideologies

Pre-service
teachers' beliefs

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Received September 2006
Accepted December 2006

Abstract

Purpose – This study aims to examine a variety of demographic, experiential, and philosophical orientation variables that may be predictive of pupil control ideologies (PCI) for teacher candidates at the beginning of a pre-service program. In particular, it sets out to provide empirically grounded generalizations regarding the relationship between philosophical orientations and PCI. Philosophical orientation variables identified candidates' beliefs about key educational concepts.

Design/methodology/approach – Quantitative methodology was used in this study. Data from approximately 720 pre-service participants in a pre-service teacher education program were analysed via a series of correlational and multiple regression analyses.

Findings – These data supported the conclusion that while demographic and experiential variables were predictive of PCI at the beginning of the teacher preparation program, the most predictive variables were contained within the philosophical orientations variable cluster.

Research limitations/implications – These findings provide empirical evidence of a link between what beginning teachers believe about education and their approach at the beginning of their teacher education program to pupil control in the classroom.

Originality/value – These findings identify circumstances that may assist in attracting males into elementary teaching at a time when major teacher organizations are highlighting this perceived weakness in the teacher recruitment process. Additionally, the study recommends inclusion in teacher preparation programs of curriculum units pertaining to pre-service teachers' beliefs about education, and provides suggestions for the content of such units.

Keywords Education colleges, Teachers, Pupils, General management, Philosophical concepts, Recruitment

Paper type Research paper

Introduction

Many variables may be predictive of pre-service teachers' pupil control ideologies (PCI) at the beginning of the pre-service teacher education program. These variables may also predict the direction and degree of change in PCI that beginning teachers will experience during the pre-service program (Hoy, 2001; Hoy and Woolfolk, 1990; Jones, 1982; Lunenburg, 1986; Moretz, 1997; Steinberger, 1984; Stiscak, 1987).

Early identification of these factors is important if pre-service teachers are to make authentic decisions about their teaching practice. The alternative, that is, to be unaware of these factors or the role that they play in shaping approaches to pupil control, is to be socialized during the practicum (Hoy and Rees, 1977; Hoy and



Journal of Educational
Administration
Vol. 45 No. 5, 2007
pp. 587-604

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0957-8234
DOI 10.1108/09578230710778213

Woolfolk, 1990; Jones, 1982) into the custodial, bureaucratic traditions of schooling (Bedard and Lawton, 2000; Hodgkinson, 1983; Marshall, 1997; Reed, 1999; Young, 1999). Such a pattern is not always in the best interests of student learning (Kickbusch, 1996; Mortimore, 1992; Stoll and Fink, 1998) or teacher health (Bauch and Goldring, 1998; Bobek, 2002; Wiley, 2000).

This study seeks, then, to identify relationships between a number of variables and pre-service teachers' PCI. Of primary concern is the predictive value of identified variables, and in particular those of the philosophical orientations (Silvernail, 1992a) variable cluster, in relation to PCI scores at the beginning of teacher education programs. The following research question is a logical outcome of the literature, and contributes to the development of new understandings in the area of pre-service teachers' PCI.

- Which of the three variable clusters (demographic, experience, philosophical orientations)[1] best predicts the pre-service teachers' PCI at the beginning of the pre-service teacher education program?

Historical context

Willower *et al.* (1967) "humanistic" and "custodial" pupil control ideologies were conceptually consonant with theories attempting to account for employer/employee relationships that emerged during the first half of the twentieth century. As such, Willower *et al.*'s concepts are validated not only by their own rigorous research, but additionally by research concerning paradigms of leadership and management that emerged over the preceding 50 or so years.

Taylor's (1914) and Fayol's (1949) "scientific rational" approach viewed people as interchangeable parts of the bureaucratic machinery, and focused on human engineering, procedure, policy, task, delegation, specialization and control. The scientific rational approach appears to significantly overlap Willower *et al.* (1967) custodial pupil control ideology, which was evidenced in classrooms by rigid control, hierarchical organization, autocratic teacher behaviour, and imposed discipline.

Seen as a critique of the "rational scientific" interpretation of organizations (Cunningham and Cordeiro, 2006), Mary Parker Follett (1941) and Elton Mayo's (Roethlisberger and Dickson, 1939) "human relations" theory was characterized by employee psychological satisfaction, social interaction, self-motivation, interpersonal relations, and empowerment. Similarly Willower *et al.*'s humanistic pupil control ideology was evidenced in classrooms by an educational community atmosphere, flexibility in status and rules, open communication, and increased student self-determination.

In 1960, McGregor put forward Theory X and Theory Y regarding the degree to which employers needed to control their employees, or saw them as willing to handle responsibility and able to be trusted (McGregor, 1960). McGregor's theories seemed to embody the competing employee relations theories of the previous half-century. At the same time, Kuhn (1962) identified the philosophical foundations undergirding distinct paradigms within which such differing approaches to management could be constructed. It is from within this research context, framed by identifiable, paradigmatically distinct, competing superordinate/subordinate relationships, that Willower *et al.* (1967) conceptualization of pupil control ideologies is identified as representing an authentic range of teachers' responses to pupil control.

Pupil control ideology form

Just as a great deal of importance was ascribed to the management of employer/employee relationships, Willower *et al.* (1967) concluded that pupil control was the dominant theme that gave meaning to much of the school's routine. Their study described a continuum on which the concept of pupil control ideology (PCI) could be measured. PCI was described along a humanistic to custodial continuum.

Humanistic orientation was evident in an "educational community" atmosphere, where students learned through interaction and cooperation with others. Psychology and sociology were prominent in understanding the processes of learning and behaviour. Self-discipline replaced strict teacher control. A democratic atmosphere led to flexibility in status and rules, interpersonal sensitivity, open communication and an increase in student self-determination. Teachers and students made and accepted responsibility for educational decisions. Blust and Willower (1979) summarized humanistic PCI as stressing trust of students and valuing student self-discipline.

Custodial orientations were typified by the presence of a rigid and highly controlled classroom atmosphere. Maintenance of order was most important, and order was often judged based on stereotypes such as appearance, behaviour, and SES. Well-dressed, neatly groomed students who sat quietly were evidence of an orderly, well-run class. Custodial teachers understood schools to be autocratic, hierarchical organizations with the flow of power and communication downwards to students. Student misbehaviour was taken personally and controlled through punishments, since students were generally perceived as irresponsible and undisciplined. Blust and Willower (1979) summarized custodial PCI as emphasizing distrust of students and valuing imposed discipline.

Willower *et al.*'s (1967) over-arching control theory rested on three key foundations. First, control is necessary because of the unselected clientele and mandatory participation of students in public schools. Second, individuals in schools wish to protect and enhance their status in relation to one another. Finally, due to the nature of schools, teachers must deal directly with students, the source of many of these threats to teacher status. According to Hoy (2001), these factors virtually guaranteed that pupil control would be an ongoing concern in school life.

Following the description of the humanistic and custodial positions, Willower *et al.* developed the PCI Form as a measure of pupil control ideology. Gaffney and Byrd-Gaffney (1996) provided a review of data confirming the construct validity of the PCI Form. This data is presented in the Instruments section of this paper. According to Hoy (2001), this instrument continues to be a good fit with theories of teaching and learning.

Prominent variables and pupil control ideology

In the years following Willower *et al.*'s (1967) establishment of the PCI Form, much work has been done to identify variables that influence teachers' PCI (Hoy, 2001). Of particular interest to the present study is research concerning PCI of pre-service teachers at the beginning of their pre-service programs. Variables in such studies can be categorized as demographic (biographic, demographic variables), experiential (educational experience variables) and philosophical (beliefs and personal orientations). There is a scarcity of such studies.

A number of studies examined the relationship between these variables and the PCI of teachers who were established in their careers. Two such studies are noted here. Smyth (1977) evaluated the predictive nature of variables in relation to teachers' PCI. In this study of 466 teachers and administrators, the variable cluster comprised the variables of age, sex, status (organizational position), teaching experience, and educational qualifications. Significant relationships were found between PCI and the biographical variables. Teachers aged 30 years and under were less custodial than those over 30, $t(464) = 6.14, p < 0.05$. Male educators were more custodial than females, $t(464) = 1.71, p < 0.05$. Educators with less than five years experience were significantly less custodial than those with more than five years, $t(464) = 3.58, p < 0.05$.

A multiple regression analysis was conducted to determine the degree to which teacher PCI could be attributed to these factors. A co-efficient of multiple determination of 0.0595 indicated that the combined influences of experience, qualifications, status, age, and sex was 5.9 percent for this sample.

Similarly, Bartlett (1976) conducted a multiple regression analysis to determine the explanatory power of demographic variables (age, sex, status, qualifications, and teaching experience) using in a sample of 193 secondary teachers. These variables were found to account for slightly less than 8 percent of the variance.

Of the studies that do involve pre-service teachers and PCI, most examine changes that occur to their PCI during the pre-service program (for example, Hoy and Rees, 1977; Hoy and Woolfolk, 1990; Jones, 1982). Very few are concerned with discovering a broad range of variables that may be predictive of "beginning" PCI.

Role of philosophy

Based on this paucity of "beginning PCI" studies, the complete lack of studies examining the relationship between philosophical orientations and beginning PCI should come as no surprise. There appears to have been no research that measures the relationship between sets of beliefs about key educational concepts (philosophical orientations), and PCI of pre-service teachers, either at the beginning of or during the pre-service program. However, according to Sergiovanni (2000), philosophy of education is the foundation for one's actions concerning education. It is a statement of what one intends to do and how in relation to education. Galbraith (2000) indicated that it is the basis for decisions, processes, and actions made about the process of instruction and learning. According to Livingston *et al.* (1995), Ornstein and Hunkins (1988), and Sheppard and Gilbert (1991), philosophy shaped the process of education, covering all the components of practice, including degree of classroom control by teacher and student.

It logically follows that the development of a deeper understanding of the predictive value of a "philosophical orientations" group of variables in relation to PCI may facilitate the purposes of this research. Such a variable cluster should contain a range of categories, each containing a set of beliefs about key concepts of education that are consistent with each other both philosophically and practically. For instance, a teacher's belief that the purpose of education is to transfer a pre-determined canon of knowledge from teacher to student may be consistent with that teacher's belief about the role of the student, and belief about the role of the teacher. The philosophical orientations variable cluster should facilitate the understanding of the predictive value of these sets of beliefs in relation to PCI of pre-service teachers.

Within such a variable cluster, each of these variables, identified below as romanticist, progressivist, and traditionalist, represents a philosophically distinct set of beliefs about, or orientation to, education. "Philosophy of science" subjectivist and objectivist views of the world identify positions within a broad conceptual framework, as described by Burrell and Morgan (1979), that allow the philosophical foundations of these variables to be seen as distinct. Romanticist and progressivist orientations appear to be more closely aligned with the subjectivist position, and the traditionalist orientation more closely aligned with the objectivist position. Subjectivist and objectivist positions may also provide a conceptual framework within which the positions along the PCI (humanistic-custodial) continuum described by Willower *et al.* (1967) can be better understood.

When pre-service teachers' philosophical orientations and their PCI are identified and considered within the context of the subjectivist-objectivist conceptual framework, the foundation for hypothesizing about the predictive nature of philosophical orientations in relation to PCI may be more easily discerned.

The educational beliefs questionnaire

Silvernail (1992a, b), following in the tradition of Sirotnik (1979) and Kerlinger and Kaya (1959, p. 667), developed the Educational Beliefs Questionnaire (EBQ) to "assess beliefs about five educational concepts from multiple philosophical orientations". These philosophical orientations were traditionalism, progressivism, and romanticism. The five concepts were:

- (1) the purpose of schools;
- (2) the nature of curriculum content;
- (3) methods of instruction;
- (4) roles of the teacher; and
- (5) roles of the student.

The EBQ is described in more detail in the Instruments section.

The traditionalist orientation centres on learning a set of predetermined facts and skills, whose knowledge of and ability to perform are in the possession of an elite group. The role of the school is transmitting essential knowledge, and perpetuating the predominant culture. Drill and practice, strong authority roles for teachers and passive roles for students are valued. This learning is administered in an externally controlled manner, and produces pre-determined quantifiable outcomes. Effectiveness is measured by quantifying cognitive achievement.

The progressivist orientation allows students to discover "facts" through "logical" inquiry, learning those facts and using those skills that are most relevant to them in their relationship to the world as they are taught to perceive it. The role of schools is to foster the intellectual process, the inquiry method of learning, teachers as facilitators, and active student involvement. Teachers are the guides who keep the learning of facts and skills within a predefined framework. The purpose is still to produce outcomes, albeit broader, more difficult to assess outcomes in the affective and behavioural as well as cognitive domain. Effectiveness is still measured by success in producing "productive" citizens.

The romanticist orientation directs attention onto the child. School is a place where children are free to experience themselves and society around them by being fully involved in choosing the direction of any program or evaluation. Schools are sources of new social ideas and individual self-awareness. Knowledge is created for each individual through their understanding of how current social issues relate to them. Teachers are guides in the natural development of each student. Outcomes within the logical positivist domain may or may not be relevant, and effectiveness may not be a linear function of input and process factors (Silvernail, 1992a).

Theoretical foundations

This research is a consideration in an applied sense of two theoretical camps. One of these camps is best represented by the concept of an internally oriented framework (for example, cognitive dissonance theory of Festinger). Within this camp, one's pupil control ideology would be consistent with beliefs about education. If the variance in pre-service teachers' PCI was most accurately accounted for by beliefs about education, then their internal beliefs may be seen as being more likely to predict their control ideology. On the other hand, if the variance in pre-service teachers' orientations to pupil control was most accurately accounted for by demographic or external factors, such as gender or where they attended school themselves, then their PCI may be seen as aligned with external factors. This result would indicate support for the social learning and social development theories of Bandura and Vygotsky. In this case, PCI may be accounted for by external socializing experiences.

The study

Based on the literature and informed conjecture, it seemed reasonable to hypothesize that all three variable clusters (demographic, experiential, philosophical orientations) would be predictive of PCI at the beginning of the pre-service program, and that the philosophical orientations variable cluster would be most predictive.

Participants

A total of 746 pre-service teachers who were enrolled in an eight-month (two-semester) pre-service teacher education program at an Ontario, Canada, University were invited to participate in this study. Within the Canadian context, two-semester "after-degree" programs are prominent in Ontario. Concurrent programs, along with two-year (four-semester) after-degree programs are more common in some Eastern and Western provinces. Table I indicates the participation rates for this study.

Level	Number of males	Number of females	Total	Participation rate (%)
Primary/junior	93	324	417	97
Junior/intermediate	71	111	182	97
Intermediate/senior	56	67	123	96
Total	220	502	722	97

Table I.
Participation rate

Instruments

Two instruments and two questionnaires were used to collect the data for this study. Willower *et al.* (1967) developed the PCI Form consisting of 20 Likert-type items as a means of locating educators' pupil control ideologies on a humanistic-custodial continuum. Two sample items are: "Pupils can be trusted to work together without supervision" (this item is reverse scored) and "It is more important for pupils to learn to obey rules than that they make their own decisions". Lower scores are more humanistic and higher scores are more custodial (Hoy and Jalovick, 1979; Jones, 1982).

Much work has been done regarding the validity and reliability of the PCI Form. Willower *et al.* (1967) reported split-half reliability coefficients in two samples of 0.95 ($N = 170$) and 0.91 ($N = 55$) using the Spearman-Brown formula. Gaffney and Byrd-Gaffney (1996) provided relevant information regarding the continued validity of the original PCI Form, including Graham *et al.* (1985) alpha coefficient of 0.90 for a sample of undergraduate and graduate education students, and Hoy and Wolfolk's (1990) alpha coefficient of 0.72 with a sample of prospective teachers. Given the literature reviewed, Gaffney and Gaffney-Byrd claimed there was support for the continued adequacy of the PCI Form in its original form for use in research.

Silvernail's (1992a) Educational Beliefs Questionnaire (EBQ) was used to collect data concerning pre-service teachers' beliefs about education. The EBQ consists of 20 Likert-type items which measure teachers' beliefs about five concepts of education. This instrument provided a means of identifying the beliefs of pre-service teachers as romanticist, progressivist, or traditionalist by providing scores on each of the three scales. Two sample items are: "Students learning from other students is an important component of any learning environment" and "Drill and factual knowledge are important components of any learning". Silvernail (1992a) presented a review of the historical, conceptual, and statistical validation of EBQ as an effective means of determining towards which of three philosophical orientations a teacher's beliefs about education are oriented. The construct validity of the EBQ was considered using factor analysis. All 20 items have loadings over 0.35, with a minimum difference of 0.20 in loading between factors. Calculations for internal consistency estimates yielded an alpha coefficient of 0.73 (Silvernail, 1992a).

A "pre-service teacher" version of the "Information Sheet" attached to Willower *et al.*'s (1967) instrument was used. Additionally, an "Experiential Questionnaire" was used to collect additional data concerning age, children, siblings, religion, and "pre-program" experiences with children and youth.

Methodology

Demographic and experiential data, data concerning the PCI scores, and data identifying the philosophical orientations of pre-service teachers were collected at the beginning of the pre-service program. Data were gathered from six individual pre-service teacher education classes taught by four different professors. Participants were informed of the voluntary nature of their participation, their right to withdraw from the study, and the confidentiality of their responses. In order to minimize any appearance of "institutional coercion", the hosting professors left the classroom during the administration of these questionnaires.

This procedure served to document differences in PCI as a function of philosophical orientations and numerous demographic and experiential variables. It also provided an

opportunity to use these data as baseline data for the subsequent monitoring of the impact of the pre-service experience on PCI. Data were analyzed using correlational analysis and multiple regression analysis.

In order to address the research question, three steps were followed. First, Pearson Product Moment correlation coefficients were computed in relation to the variables grouped in the theoretically constructed variable clusters. It is important to note that while the variables for this study are conceptualized and presented as three variable clusters (demographic, experience, and philosophical orientations), from a data analysis perspective it was more appropriate to sub-divide the experience variable cluster into informal teaching experience and academic experience variable clusters. This facilitated a more accurate examination of factors outside and inside the formal educational experience of the participants, as well as reduced the number of variables that would be examined in each procedure. See Appendix for variables included in each of these variable clusters.

Second, a series of multiple regression analyses were conducted with respect to the variable clusters (demographic, informal teaching experience, academic experience, and philosophical orientations), with the PCI scores as the dependent variable. Third, a Forward method multiple regression analysis was used to explore a potentially predictive variable cluster arising from this set of variables.

Results

Pearson product moment correlational analyses. First, four Pearson Product Moment correlational analyses were computed in order to examine the relationship between the variables in each cluster and PCI scores. The results are summarized below.

- *Demographic variable cluster.* There were small but significant correlations between PCI and gender ($r = -0.18, p < 0.01$), marital status ($r = 0.10, p < 0.01$), location of elementary education ($r = 0.13, p < 0.01$), location of secondary education ($r = 0.11, p < 0.05$) and some religious variables. The negative correlation between PCI and gender indicated that males had higher PCI scores (mean = 52.58, SD = 7.51) or were more custodial than females (mean = 49.84, SD = 6.74), $t(720) = 4.85, p < 0.01$. The positive correlation between PCI and marital status indicated that married participants (mean = 51.78, SD = 7.47) had higher PCI scores than singles (mean = 50.25, SD = 6.89), $t(722) = -2.63, p < 0.01$. The positive correlation between PCI and location of elementary education indicated that participants who received their elementary education in urban schools (mean = 51.99, SD = 7.71) had higher PCI scores than those in rural (mean = 49.62, SD = 6.55) or suburban (mean = 49.77, SD = 6.85) schools, $F(467) = 5.42, p < 0.01$.
- *Academic experience variable cluster.* There were small but significant correlations between PCI and undergraduate major in the natural sciences ($r = -0.15, p < 0.01$), undergraduate major in psychological studies ($r = 0.09, p < 0.05$), undergraduate major in sociological studies ($r = 0.11, p < 0.05$), and undergraduate major in the creative arts ($r = 0.13, p < 0.01$),

The negative correlation between PCI and undergraduate major in the natural sciences indicated that participants with undergraduate majors in the natural sciences had higher PCI scores (mean = 53.22, SD = 6.78) or were more custodial than other participants

(mean = 49.94, SD = 7.05), $t(464) = 3.34, p < 0.01$. The positive correlation between PCI and undergraduate major in psychological studies indicated that these participants had lower PCI scores (mean = 48.75, SD = 6.76) or were more humanistic than other participants (mean = 50.60, SD = 7.12), $t(466) = -1.93, p < 0.05$. The positive correlation between PCI and undergraduate major in sociological studies indicated that these participants had lower PCI scores (mean = 47.80, SD = 6.11) than other participants (mean = 50.59, SD = 7.14), $t(466) = -2.42, p < 0.05$. The positive correlation between PCI and undergraduate major in the creative arts indicated that these participants had lower PCI scores (mean = 47.67, SD = 7.13) than other participants (mean = 50.64, SD = 7.04), $t(466) = -2.71, p < 0.01$.

- *Informal teaching experience variable cluster.* Since the subsequent multiple regression analysis indicated that these variables were not significant in accounting for the degree of variance in pre-service teachers' PCI, these variables are not considered further.
- *Philosophical orientations variable cluster.* A Pearson Product Moment correlation coefficient for PCI scores was computed for each of the philosophical orientations. For the romanticist philosophical orientation, $r = -0.15, p < 0.01$, for the progressivist philosophical orientation $r = -0.17, p < 0.01$, and for the traditionalist philosophical orientation, $r = 0.36, p < 0.01$.

The negative correlation between PCI and romanticist score indicated that high romanticists had lower PCI scores (mean = 49.86, SD = 7.12) or were more humanistic than low romanticists (mean = 51.79, SD = 6.85), $t(707) = 3.67, p < 0.01$. The negative correlation between PCI and progressivist score indicated that high progressivists (mean = 49.33, SD = 7.19) had lower PCI scores than low progressivists (mean = 51.69, SD = 6.94), $t(699) = 4.36, p < 0.01$. The highest correlation regarding the philosophical orientations variable cluster was for traditionalist. The positive correlation between PCI and traditionalist indicated that high traditionalists (mean = 52.69, SD = 7.18) were more custodial than low traditionalists (mean = 48.84, SD = 6.40), $t(706) = -7.53, p < 0.01$.

Multiple regression analyses. Second, a series of multiple regression analyses were conducted with respect to demographic, informal teaching experience, academic experience and philosophical orientations variable clusters, with the PCI scores as the dependent variable. The R^2 coefficients indicated strength of the variable clusters with respect to explained variance, and by comparison, the most predictive variable cluster for PCI scores. The results are summarized below:

- *Demographic variable cluster.* The demographic variable cluster was significant in predicting the PCI scores of the participants, $R^2 = 0.121, F(15, 424) = 3.88, p < 0.01$. The variable cluster summary indicated that the demographic cluster appeared to account for 12.1 percent of the variance in the PCI scores of pre-service teachers.

Only two of the independent variables contributed significantly to prediction of PCI scores, gender (Beta = -0.206) and location of elementary education (Beta = 0.166). For gender, males were more likely to have higher PCI (more custodial) scores than females. For location of elementary education, the more urban the elementary school experience, the more custodial the PCI score was likely to be.

- *Experience variable clusters.* Multiple regression analyses were conducted in relation to each of the two experience variable clusters. The academic experience was significant in predicting the PCI scores of the participants, $R^2 = 0.070$, $F(10, 455) = 3.45$, $p < 0.01$. The variable cluster summary indicated that the academic experience variable cluster appeared to account for 7.0 percent of the variance in the PCI scores of pre-service teachers.

Only two of the independent variables comprising this variable cluster contributed significantly to prediction of PCI scores, major in the natural sciences (Beta = -0.17) and major in the humanities (Beta = -0.12). Pre-service teachers with majors in the natural sciences and the humanities were more likely to have higher (more custodial) PCI scores.

The informal teaching experience variable cluster was not significant in predicting the PCI scores of the participants, $R^2 = 0.040$, $F(11, 452) = 1.72$, $p > 0.05$. The variable cluster summary indicated that the informal teaching experience variable cluster appeared to account for 4.0 percent of the variance in the PCI scores of pre-service teachers.

- *Philosophical orientations variable cluster.* The philosophical orientation variable cluster was significant in predicting the PCI scores of the participants, $R^2 = 0.207$, $F(3, 678) = 59.11$, $p < 0.01$. The variable cluster summary indicated that the philosophical orientation variable cluster appeared to account for 20.7 percent of the variance in the PCI scores of pre-service teachers.

Each of the three philosophical orientations appeared to contribute significantly to the R^2 score, total romanticist score (Beta = -0.120), total progressivist score (Beta = -0.231), and total traditionalist score (Beta = 0.433). As pre-service teachers scored higher on romanticist and progressivist philosophical orientation measures, their PCI scores tended to indicate a more humanistic orientation. As they scored higher on traditionalist philosophical orientation measures, their PCI scores tended to indicate a more custodial orientation.

Based on the statistical evidence presented above, it appears that the best predictor for pre-service teachers' PCI at the beginning of the B.Ed. program may be the philosophical orientation variable cluster. It also appears that each of the variables in the cluster is significant in relation to PCI scores.

Multiple regression analyses – emergent variable cluster. Third, given these effects, an emergent issue arose. It was logical to ask what a composite variable cluster could contribute to exploring such effects. To address this question, a multiple regression analysis was conducted on a variable cluster composed primarily of variables that contributed to the ability of the four preceding variable clusters to account for PCI score variances. The variables included in the variable cluster were traditionalist score, progressivist score, romanticist score, gender, no religion, Christian religion, undergraduate major, and location of elementary education. Religion variables, originally part of the demographic variable cluster, were included since it was believed that an understanding of the relationship of religion to pupil control orientations would contribute meaningfully to the pupil control ideology studies. The religion variables were originally in the form of the dummy variables Athiest, Christian, Hindu, Islam, Jewish, Sikh, other, and no religion. "Christian" ($N = 355$) and "no religion" ($N = 65$)

represented the highest number of cases for this range of variables. If these variables were demonstrated to be significant, then the higher frequency of these cases would allow for a more fine grained analysis of interaction effects with other variables in relation to PCI during the pre-service program. The regression analysis was significant, $R^2 = 0.278$, $F(8, 290) = 13.96$, $p < 0.001$. It accounted for 27.8 of the variance.

A forward method regression was then used to determine the most predictive variable cluster arising from this set of variables. Using this method, the new "emergent" variable cluster included traditionalist orientation, progressivist orientation, gender, undergraduate major, and location of elementary education. The emergent variable cluster was significant, $R^2 = 0.259$, $F(5, 293) = 20.53$, $p < 0.001$. It accounted for 25.9 percent of the variance.

Conclusions

As hypothesized, the demographic and philosophical orientations variable clusters were predictive of PCI at the beginning of the pre-service program. Of the two variable clusters ("informal teaching experience" and "academic experience") emerging from the experience variable cluster, the academic experience cluster was identified as predictive of PCI. The philosophical orientations variable cluster appeared to be most predictive. Not all variables within each of the clusters were determined to be significant in contributing to the degree of variance accounted for by the cluster.

Noteworthy relationships

Three noteworthy relationships exist among the variables of the emergent cluster. First, at least one demographic, experience, and philosophical element was present in this cluster. This finding of an expanded range of potential predictors of PCI is consistent with Moretz's (1997, p. 2) comments regarding the large amount of work that remained to be done in this area. "Concepts and measures of control ideology in schools are no less problematic today than 30 years ago, despite a growing body of research on this topic".

Second, two variables emerged that reflect experiences of participants prior to their entering the pre-service program (location of elementary education, undergraduate major). In this regard, a number of earlier studies which examined a variety of demographic and experience variables together (Bartlett, 1976; Smyth, 1977) suggested that the predictive value of these variables would be in the 5 percent to 8 percent range. In the present study, demographic and experience clusters, including location of elementary education and undergraduate major respectively, were initially examined separately. These demographic and experience clusters accounted for approximately 12 percent and 7 percent of the PCI variance in this study, and contributed to the finding that the emergent variable cluster accounted for 25.9 percent of the variance in PCI scores.

Third, two of the top three predictors of PCI were philosophical orientation (beliefs about education) variables. A quarter-century ago, Hoy and Jalovick (1979, p. 45) cited the problem of lack of critical empirical investigations into the educational rhetoric associated with beliefs about education. They indicated that ideas concerning beliefs about education were praised by their advocates and eschewed by their opponents, however, "[A] review of the literature yields mostly opinions, prescriptions, and

anecdotes, not generalizations based on research findings". In this study, "generalizations based on empirical findings" indicate that a progressivist orientation is associated with more humanistic PCI and a traditionalist orientation with more custodial PCI, and that these variables contribute significantly to the emergent variable cluster's predictive value.

Each of the variables in the emergent cluster serves to further differentiate pre-service teachers from each other at the beginning of their teacher education program. More articulated understandings of these differences among beginning pre-service teachers may provide a firmer foundation on which authentic and successful approaches to pupil control in the classroom can be developed.

Beliefs about education

As reported above, there are no studies relating directly to the ability of philosophical orientations to predict PCI. Several studies that considered aspects of belief systems did, however, identify the likelihood that teachers with a higher degree of openness, higher autonomy, or a lower degree of bureaucratic orientation tended to have more humanistic PCI. Those who were more dogmatic, control-oriented, or bureaucratic tended to be more custodial (Willower *et al.*, 1967; Hoy and Rees, 1977; Hoy and Woolfolk, 1990). The findings of the present study go beyond these aspects of belief systems into areas that are specifically related to beliefs about education. They further understanding of the predictive ability of beliefs systems by demonstrating that traditionalist, progressivist, and romanticist beliefs about key educational concepts are predictive of pre-service teachers "beginning" PCI scores. These specific sets of beliefs about education are linked directly to custodial or humanistic pupil control ideologies.

It was hypothesized that the most dramatic effects arising from an examination of the variable clusters in relation to predicting pre-service teachers' PCI would be related to the philosophical orientation variable cluster. This hypothesis was supported by the findings. These "internal" variables accounted for 20.7 percent of the PCI variance.

The higher degree of variance accounted for by the philosophical orientations cluster may be explained by Hoy's (1967) theory of anticipatory socialization. Hoy theorized that beginning teachers would anticipate the bureaucratic norms, roles and expectations of the school system, and in particular of experienced teachers, and would attempt to find ways of accommodating these expectations. In this manner, in personal preparation for entry into a pre-service teacher education program, pre-service teachers may have already resolved some potential areas of anticipated dissonance. Candidates would have recently pondered the significant factors that they might encounter in the months ahead, including potential dissonance between their beliefs and what they now anticipate that they must do in order to be considered successful in the classroom. Such reflection may have caused beginning pre-service teachers to consciously consider adjusting their stated beliefs (as reflected in their responses to the EBQ items) to align more closely with what they anticipated to be the dominant approaches to classroom management and pupil control.

Gender and elementary teaching

The emergent variable cluster identified in the study may be meaningful as further research examines the interactions among these variables during the pre-service teacher education program. In particular, findings that relate to the placement of males

in elementary teaching positions may be of interest to educational policymakers, administrators, and potential practitioners alike.

Attracting males to elementary teaching positions has become a prominent endeavour in both the USA and Canada. In the USA, the National Education Association (NEA) articulated the importance of the humanistic approach to education, and its relationship with gender. At their 2002 national conference, they highlighted the need to “identify, recognize, recruit, and retain” more male teachers, particularly at the elementary level, where teachers need to “nurture and develop children” (NEA, 2002, p. 1). They reported that only 21 percent of American teachers in public schools were male, while at the elementary level, that number falls to 9 percent (NEA, 2002).

Similarly, in their Ontario (Canada) College of Teachers (OCT) report *Narrowing the Gender Gap: Attracting Men to Teaching*, Bernard *et al.* (2004, p. 3) indicated that only 30 percent of Ontario teachers were male. In the “under thirty” group, that number fell to 10 percent for primary/junior and 20 percent for junior/intermediate teachers. Their primary recommendation, similar to the NEA’s, was that “the government of Ontario support the development of a three-year, province-wide marketing campaign to attract men to careers in teaching”.

As identified in the foregoing correlational analyses, participants with an undergraduate major in the natural sciences tended to have a more custodial PCI, while those with undergraduate majors in psychological studies, sociological studies, and the creative arts tended to have a more humanistic PCI. In addition, participants with romanticist and progressivist philosophical orientations tended to have humanistic PCI, while those with traditionalist philosophical orientations tended to be more custodial. Finally, females tended to be more humanistic than males. Bearing these tendencies in mind, it would be interesting to develop a more fine-grained understanding of whether, during the pre-service program, the PCI of male pre-service teachers with romanticist or progressivist philosophical orientations and people-oriented[2] undergraduate majors would tend to remain in the humanistic range. This would be contrary to the “broad brush” pattern most often reported in the literature, which is that during pre-service socialization, pre-service teachers’ PCI become more custodial (Hoy, 1967; Hoy and Woolfolk, 1990; Jones and Harty, 1981; Lunenburg, 1986), and that males appear to become more custodial than females (Smyth, 1977; Hoy and Rees, 1977).

Based on the findings of the present study concerning predictors of PCI at the beginning of the pre-service teacher education program, it would seem reasonable to hypothesize that the co-existence of a particular set of beliefs about education (romanticist or progressivist), and a particular type of undergraduate major (people-oriented) may tend to diminish the predictive power of gender over time. The PCI of males with these characteristics may tend to be like the more humanistic female PCI scores than the more custodial PCI of the rest of the male participants. As such, certain male teacher candidates may be identifiable as more likely to be suited to and successful in the elementary classroom.

Such characteristics, prominent in elementary teaching (Jones, 1982; Hoy and Woolfolk, 1990), are identifiable at the point of admission into the pre-service program, as demonstrated in this study. If indeed future research supports the hypothesis that the interaction of these variables during the pre-service program is associated with the maintenance of a humanistic PCI among male pre-service teachers, this new

understanding may assist in meeting the challenge, as identified by the NEA and the OCT, of attracting male teachers to the elementary classroom. With such knowledge, males with romanticist or progressivist philosophical orientations and people-oriented undergraduate majors may be more likely to enter the profession if they see elementary education as the domain of people-oriented, humanistic individuals rather than simply the domain of females.

Enhanced curriculum

New understandings concerning the predictive nature of philosophical orientations may provide a rationale for giving a higher priority within the curricular components of teacher education programs to pre-service teachers' educational beliefs. Such curriculum units could facilitate the development of pre-service (and in-service) teachers' understandings of the importance of educators' beliefs about education. They might focus, for instance, on how those beliefs serve to identify differing philosophical orientations of not only teachers but also administrators and policymakers. Most importantly, such learning experiences might open the door to new understandings of the impact of these often-competing forces on children in the classroom.

New curriculum units might address these competing forces as manifestations of deeply held beliefs about education best understood within the subjectivist and objectivist philosophy of science framework. These positions could be illustrated, for instance, through the writings of Dewey and Popper. Dewey (1897) believed that philosophy was foundational to educational change and that while guided by the teacher, understanding and knowledge arose "from the experience of all engaged in the learning process" (Dewey, 1938, p. 72). On the other hand, Popper (1968, p. 19) in "the rationalist tradition" dismissed philosophy in its legitimization of perception as a way of knowing.

Such an approach to teacher education could also examine the conflict that this creates for beginning teachers (Bauch and Goldring, 1998; Bobek, 2002; Samuelowicz and Bain, 2001; Wiley, 2000), but also consider potential strategies for reducing the impact of such conflict on teachers, administrators, and children. Such strategies could include, for instance, adaptations of Petty and Cacioppo's (1986) elaboration likelihood model and Ellis' (1989) rational emotive therapy. The elaboration likelihood model would assist pre-service teachers in understanding the value of "central" philosophically sound approaches to decision making in relation to such matters as pupil control. An understanding of the rational emotive approach could assist pre-service teachers in developing strategies for detecting, scrutinizing, and disputing their own catastrophic thinking when faced with mandated methodologies concerning in-school education processes and behaviours that may conflict with their own beliefs regarding the learning process.

These findings point to the relevance of "beginning" pre-service teacher characteristics in relation to issues of pupil control in classrooms. Future research is needed to confirm and extend these findings. Longitudinal studies that take into account the lived experiences of more knowledgeable beginning teachers may provide a firmer foundation for the continued improvement of teacher education and ultimately the learning experiences of students in classrooms.

Notes

1. Variables included in each of the variable clusters are identified in the Appendix.
2. For subsequent study, participants could perhaps be identified as belonging to one of two groups. The people-oriented group could, for instance, comprise majors most closely associated with psychological studies, sociological studies, and creative arts. These majors could be grouped together since they may more likely be concerned with personal interactions, and less with text-based knowledge. The "text-oriented" group could comprise majors most closely associated with the natural sciences, study of the human body, and the humanities. These majors could be grouped together since they may be concerned with text-based knowledge, and less with personal interactions.

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Further reading

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Appendix. Variables contained in each of the variable clusters

As explained in the Results section, it is important to note that while the variables for this study are conceptualized and presented as three variable clusters (demographic, experience, and philosophical orientations), from a data analysis perspective, it was more appropriate to sub-divide the experience cluster into informal teaching experience and academic experience variable clusters. This facilitated a more accurate examination of factors outside and inside the formal educational experience of the participants, as well as reduced the number of variables that would be examined in each procedure (Table AI).

Variable cluster	Variables
Demographic	Gender Marital status Parent Parent of male child Parent of female child Age Location of elementary and secondary education as a student Religion
Informal teaching experience	Level of preparation (primary/junior, junior/intermediate, intermediate/senior) Highest degree attained Series of dummy variables indicating whether the participants' undergraduate major was best described as in the area of natural sciences, study of the human body, social sciences, psychological studies, sociological studies, creative arts, humanities, business, or English)
Academic experience	Taking of responsibility with scouts/guides Sunday school Baby sitting Day/summer camps Cadets 4H clubs Youth groups/clubs Coaching Life-guarding Music lessons Tutoring
Philosophical orientations	Romanticist philosophical orientation Progressivist philosophical orientation Traditionalist philosophical orientation

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