MOTIVATING CONTENT: HOW INTEREST AND SELF-EFFICACY RESPOND TO SUBJECT MATTER TAUGHT IN AN ALTERNATIVE TEACHER EDUCATION PROGRAM

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*Understanding how teachers' motivational levels respond to the course content is particularly relevant in Catholic schools, where instructors are routinely required to teach courses both within and beyond their certification area because of budgetary constraints. Students in the ACE alternative licensure program face this challenge during their 2 years of teacher preparation. Pre and post data from first- and second-year ACE students (*n = *107) revealed that although subject matter interest levels remained relatively robust throughout the academic year for primary certification subjects, significant differences emerged in scores for religion and other out-of-certification courses. In addition, sense of self-efficacy in classroom management, student engagement, and instructional strategies also varied by subject matter taught and year in the program.*

INTRODUCTION

In 1994, an alternative licensure program was initiated to prepare students for service in under-resourced Catholic schools. The Alliance for Catholic Education (ACE) now enrolls approximately 175 graduate students each year in a 2-year/2-summer structure that incorporates full-time teaching experiences during both academic years (Watzke, 2005). The distinctive mission of this program is based upon three pillars: "developing professional educators who would live in the context of community and grow in an eagerness to share and nourish the spiritual life" (McGraw & Scully, 2002, p. 17).

When potential applicants are asked why they desire to enter the program, their responses generally include: (a) serve the Catholic Church; (b) give back to Catholic schools; (c) explore the viability of teaching as an

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occupation; and (d) fulfill a long-term desire to become a teacher (J. Johnstone, personal communication, March 23, 2006). Although these four general descriptors reveal motives for entering ACE, it is still imperative to identify and monitor students' motivational levels after they are immersed in the rigors of the program, because motivation sustains and directs sequences (Graham & Weiner, 1996) associated with learning. Therefore, this cross-sectional study seeks to explore how the motivation of in-program ACE teachers may vary during their training period. More specifically, this study examines two motivational variables associated with teachers—interest and sense of self-efficacy—to note changes that may occur over time relative to content areas being taught.

TEACHER INTEREST AND SENSE OF SELF-EFFICACY

TEACHER INTEREST

Educational philosophers and practitioners have expounded on the role of interest in learning for centuries. As conceptualized by Dewey (1899), interest occurs when a relationship is formed between a person and an object, subject, or activity. Some describe the relationship as being deep-seated and originating in the individual (Renninger, 2000; Schiefele, 1991); others consider that interest can also be a temporary state or response to an attractive situation or object (Hidi & Harackiewicz, 2000). Most interest researchers, however, agree that interest energizes the underlying needs or desires of the learner (Alexander, Murphy, Woods, Duhon, & Parker, 1997) in a way that can positively impact cognitive (Schiefele, 1996), affective (Sansone & Smith, 2000), and volitional (Dewey, 1899) processes.

Although the literature on student interest is extensive and continually expanding, research relative to teacher interest is considerably less developed. Thus far, findings indicate that teacher interest is primarily expressed as interest for the subject matter, but teachers are also interested in the profession of teaching and their students (Long & Woolfolk Hoy, 2006). Primarily, an instructor's interest for the subject matter is categorized as an individual interest, which is an intrinsic personal characteristic (Schraw & Lehman, 2001) that represents an "enduring predisposition to reengage with particular content over time" (Hidi & Renniger, 2006, p. 113). Thus every occasion to know and experience more about the subject matter has the potential to increase a teacher's value of self or consciousness of worth, further motivating subsequent interactions with the same subject (Dewey, 1913).

Cognitively speaking, being interested "manifests itself in several ways, including active engagement, focusing of one's attentional resources, and learning more than one would otherwise learn" (Schraw & Lehman, 2001, p. 23). Having an interest fuels the acquisition of knowledge (Schiefele, Krapp, & Winteler, 1992) because interest requires knowledge in order to grow and increase (Tobias, 1994). Therefore, it is not surprising that students consider their teachers' breadth and depth of subject matter knowledge to be a primary indicator of an instructor's interest in the content area (Long & Woolfolk Hoy, 2006). Furthermore, students also claim that interested teachers employ a wide range of pedagogical content knowledge, which suggests that interested instructors not only possess knowledge about their subjects, but also know how to teach them effectively.

In addition to its cognitive dimensions, a teacher's interest in the subject matter also incorporates two affective valences—positive feelings (enjoyment, involvement) and value (personal significance) for the subject matter. Interested instructors typically demonstrate enthusiasm (Dreschel, Prenzel, & Kramer, 2001) and high regard for their content area (Long & Woolfolk Hoy, 2006). As a result, teachers who speak convincingly of their subjects' importance and display pleasure or excitement in the content inspire students to actively develop an affective interest in the same subject (Long & Murphy, 2005).

Finally, interested teachers invest considerable effort into the subjects they teach—both in and outside of the classroom. For example, students who observe their music instructors performing with a local symphony orchestra associate these extracurricular activities with being interested (Csikszentmihalyi, Rathunde, Whalen, & Wong, 1993). Moreover, interest is demonstrated when teachers engage in effortful, enduring, and playful classroom interactions and expect high standards of performance from their students (Long & Woolfolk Hoy, 2006). Evidence indicates that teachers who consistently model these attitudes and behaviors to students challenge them to keep persisting until they achieve commendable results.

Collectively, these findings summarize current perceptions of teacher interest and why it is important. They also suggest that interest has the potential to empower a teacher's needs and desires (Alexander et al., 1997) as well as to support student learning. However, much of this literature was obtained from the perceptions of student participants. Thus it is essential to similarly explore teachers' perceptions of subject matter interest.

SELF-EFFICACY

Two decades ago, Bandura (1986) developed a Model of Reciprocal Determinism which suggested that learning is the composite interaction of

three variables: behavior, environment, and person. Within this social-cognitive theory, personal beliefs and attitudes are represented as affecting learning outcomes; however, one personal factor emerged as particularly prominent—self-efficacy (Bandura, 1997). Defined as a belief, these future-oriented judgments powerfully influence the control exercised by individuals (Goddard, 2002) regarding their capabilities to organize and execute action (Goddard, Hoy, & Woolfolk Hoy, 2004). As such, efficacy perceptions appear to determine whether individuals engage in and perform a task, persist, employ strategies, seek help, or are flexible (Pajares, 1996).

Research further suggests that mastery experiences, physiological and emotional arousal, vicarious experiences, and social persuasion support self-efficacy's development. Mastery experiences occur when individuals actively perform a task themselves, whereas vicarious tasks, such as observing others perform or discuss a task, depend upon the quality of attention (e.g., warm, powerful, atypical people command more attention), retention (enhanced by using simple verbal descriptions or vivid images, logical and clear demonstrations), reproduction (the ability to match behavior to the model's performances), and reinforcement or incentive conditions (Bandura, 1986; Santrock, 2001). In contrast, the potency of social persuasion (e.g., specific performance feedback) depends upon the persuader's credibility, trustworthiness, and expertise (Bandura, 1997). Although each source of efficacy is important, they are not the sole determinants of efficacy beliefs, because people individually weigh, interpret, and assign value to these sources (Goddard, 2002). Furthermore, assessments of efficacy are socially situated and do not occur in a personal vacuum (Goddard, LoGerfo, & Hoy, 2004).

Within the context of education, a teacher's sense of efficacy influences teacher behavior, which directly impacts student achievement (Goddard, 2002; Goddard & Goddard, 2001). Moreover, efficacy beliefs tend to influence such behaviors as: (a) helping struggling students arrive at correct answers rather than simply providing the correct answers (Allinder, 1994); (b) employing strategies that minimize negative affect (Ashton & Webb, 1986); (c) constructing classroom environments characterized by warm interpersonal relationships and academic work; (d) using activity-based, student-centered learning (Enochs, Scharmann, & Riggs, 1995); and (e) implementing more humanistic approaches to pupil control (Czerniak & Schriver, 1994).

Recent research on teacher efficacy has found teachers with higher levels of efficacy trust their colleagues, principals, and students (DaCosta & Riordan, 1996; Hoy, Smith, & Sweetland, 2002), are open to educational consultation (DeForest & Hughes, 1992), have positive regard for education-

al reform (DeMesquita & Drake, 1994), and possess more job satisfaction (Lee, Dedrick, & Smith, 1991). Furthermore, schools with efficacious teachers are associated with stronger parental involvement (Hoover-Dempsey, Bassler, & Brissie, 1987) and fewer suspensions and drop-out rates (Esselman & Moore, 1992).

As Bandura's theory suggested that mastery experiences are particularly influential in the formation of self-efficacy, teacher efficacy could be most malleable during an instructor's initial years in the classroom. Unfortunately, one investigation of students who completed an undergraduate degree in content areas exclusive of education before matriculating into an intensive five-quarter Master's of Education program found that teacher efficacy significantly increased during student teaching but declined during the first year of teaching relative to the level of support received (Woolfolk Hoy & Burke Spero, 2005). Although these students were placed in K-12 schools for most of their graduate program, they did not function as lead teachers during the entire time; therefore, the authors concluded that first-year teachers needed greater protection and support.

ACE administrators appear to have responded to this challenge by assigning each in-program teacher to a mentor teacher within his or her building. In addition, ACE supervisors regularly visit their in-program teachers and require their attendance at two collective retreats each year. Furthermore, in-program teachers who are assigned to the same geographic location live together in ACE homes, providing numerous opportunities for problem solving and exchanging ideas with their teaching peers. One study discovered that the high degree of autonomy and flexibility available to ACE participants supported efficacious beliefs related to promoting student achievement and sociomoral development (Khmelkov & Power, 2002). In addition, case studies of three second-year ACE teachers found that sense of efficacy was re-affirmed after the struggles of year one by reformulating personal commitments to community, service, inner transformation, and instructional objectives (Cashmere, 2007).

In conclusion, the limited empirical research into teacher interest and the recent development of a more sophisticated teacher sense of efficacy measure (Tschannen-Moran & Woolfolk Hoy, 2001) provoked us to explore these constructs more carefully. Moreover, ACE's alternative licensure program is a unique setting for examining teacher motivation due to these four factors: (a) the program requires 2 years of preservice as the lead instructor; (b) in-program teachers are placed in rural, urban, and suburban settings; (c) their students represent a broad range of ethnic and economic diversity; (d) they often instruct classes within their primary certification area as well as courses unrelated to their primary area. As such, these conditions led us to formulate the

following two research questions: (a) To what extent do pre-post subject matter interest and self-efficacy subscale scores of first- and second-year students in the ACE program vary across subjects taught (i.e., primary certification, out-of-certification subject areas, and religion)? (b) To what extent do pre-post subject matter interest and self-efficacy subscale scores of first- and second-year students in the ACE program vary by gender, school demographics, and grade level taught?

METHODS

PARTICIPANTS

Participants (n = 107) were students enrolled in the ACE Master of Education alternative licensure program. Prior to admission in the program, each participant completed a Bachelor's degree and acquired some limited experience in teaching and/or tutoring. Of the total, most (n = 57) had just entered the program and were categorized as first-year "in-program" teachers; the remaining participants (n = 50) were termed second-year "in-program" teachers, because they had already completed one year of coursework and service as a lead teacher.

Demographic data for each group (first year, second year) were comparable in gender (males 55%, 54%; females 45%, 46% respectively) and ethnicity (African American 8%, 8%; Asian 3%, 0%; Caucasian 82%, 86%; Hispanic 8%, 5%). The classification of school settings in which ACE students were placed, however, did vary between groups. Of first-year in-program teachers, 74% were in urban, 15% suburban, and 11% rural schools; second-year teachers worked in schools categorized as 57% urban, 19% suburban, and 23% rural. Furthermore, ACE administrators and personnel identified schools where ACE teachers served as representing a range of three socioeconomic categories (first year: 33% low income schools, 29% middle income, and 38% high income; second year: 32% low income schools, 26% middle income, and 42% high income).

PROCEDURES AND INSTRUMENTS

Participants were solicited for the study after 6 weeks of coursework during the summer session of 2005, prior to their placement as lead teachers in Catholic schools across the southern United States. After completing permission slips, participants received instructions via email on how to enter the Survey Monkey Web site and respond to demographic questions and two motivational measures. The Web site, which remained accessible for data collection for approximately 10 days, reopened in the spring of 2006 for participants to repeat the procedure after they had completed 7 months of class-

room instruction in their respective school settings. Students were paid $5 for answering each survey, with a maximum total of $10.

Interest

"In-program" ACE teachers in both groups (first year, second year) self-reported subject matter interest across three different categories: primary certification area (PC), out-of-certification area (OC), and religion (RE). All three designations were necessary as most (95%) ACE instructors teach courses in both their licensure and additional content areas relative to the school's academic needs. A smaller number of ACE instructors (12%) taught classes within all three categories.

The interest measure consisted of 13 items corresponding to two factors (cognition and affect) represented in the literature. Four cognitive items focused upon knowledge acquisition and thought processes, as denoted by the following sample item: "I want to acquire more knowledge and understanding in this content area." Nine affective items measuring value and positive emotion included, "I consider this content area to be very valuable," and "I want to teach this content area, because I enjoy learning about it." Students selected from a 5-point modified Likert response scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The interest subscales had a Cronbach alpha of .70 (cognitive) and .87 (affective).

Self-Efficacy

Participants also completed the short version (12 items) of the Teacher's Sense of Efficacy Scale (TSES), consisting of three distinct subscales (i.e., student engagement, instructional strategies, and classroom management). By design, the measure uses four items to address each subscale (Tschannen-Moran & Woolfolk Hoy, 2001). Ratings across a 9-point modified Likert response scale range from 1 (*nothing*) to 9 (*a great deal*). Participants also self-reported efficacy scores across the same three subject categories (PC, OC, RE) when applicable. Examples of sample items include: (a) Student engagement: How much can you do to get students to believe they can do well in school work? (b) Instructional strategies: To what extent can you craft good questions for your students? (c) Classroom management: How much can you do to get children to follow classroom rules? Cronbach alphas for each self-efficacy sub-scale were .78, .76, and .89 respectively.

RESULTS AND DISCUSSION

DESCRIPTIVE STATISTICS

Table 1 presents pre- and post- means, standard deviations, and differences by subscale for both subject matter interest and sense of self-efficacy. In

addition, Table 1 compares data by year in the program (first, second) and subject categories (PC, OC, RE). Overall, the range of first-year pre-scores indicated mean interest was moderately strong or strong in both cognition and affect across subjects (cognitive interest from 4.47 in RE to 4.62 in PC; affective interest from 3.94 in OC to 4.53 in PC). Scores for second year were found to be in the same range (cognitive interest from 4.10 in RE to 4.45 for PC; affective interest from 4.15 in OC to 4.49 in PC). In general, first-year cognitive interest pre-scores were relatively higher and more uniform across subjects than second-year scores. Affective first-year pre-scores were similarly higher than second-year scores except in OC subjects, but reflected more variance across subjects. These results show that both groups prior to entering their assigned classroom in August generally had the highest interest scores in their primary certification/PC subjects. In addition, they rated religion/RE as less cognitively interesting but more affectively interesting than out-of-certification/OC subjects they were expected to teach.

After teaching for 7 months, cognitive interest in primary certification/PC subjects remained relatively stable for both groups, although it dropped almost a half standard deviation (-.42, -.44) across each group in OC courses. Both groups' cognitive interest in religion decreased, but the decline was greater in the first-year group, where the decline was almost a quarter standard deviation on the groups' post-test score. In contrast, OC affective interest ratings diminished in both groups, yet PC and RE reductions were lower only in the first-year group. The relatively moderate changes in subject matter interest did, however, distinctly differ from pre- to post- changes in efficacy.

Table 1

Descriptive Statistics by ACE Year and Subject Taught

	Year 1 (*N* = PC =57; OC = 19; RE = 28)					Year 2 (*N* = PC =50; OC = 16; RE = 25)				
	Pre		Post		Diff	Pre		Post		Diff
	M	*SD*	*M*	*SD*	Post-Pre	*M*	*SD*	*M*	*SD*	Post-Pre
PC										
Cognitive	4.62	0.38	4.61	0.52	-0.01	4.45	0.60	4.38	0.61	-0.07
Affect	4.53	0.43	4.38	0.60	-0.15	4.49	0.51	4.50	0.44	0.01
Student engagement	7.04	1.01	6.32	1.22	-0.71	6.74	1.18	6.69	1.15	-0.05
Instructional strategies	7.40	1.06	7.07	1.02	-0.33	7.40	1.05	7.70	0.88	0.30
Classroom management	7.49	0.95	7.09	1.32	-0.40	7.45	1.11	7.66	0.98	0.21
OC										
Cognitive	4.57	0.40	4.15	0.59	-0.42	4.42	0.53	3.98	0.72	-0.44
Affect	3.94	0.64	3.76	0.53	-0.18	4.15	0.74	3.95	0.73	-0.19
Student engagement	6.90	1.15	5.75	0.87	-1.15	6.69	1.31	6.53	1.17	-0.16
Instructional strategies	6.88	0.95	6.15	1.16	-0.72	6.86	1.54	6.64	1.32	-0.22
Classroom management	7.36	0.78	6.32	1.41	-1.04	7.36	1.32	7.06	1.35	-0.30
RE										
Cognitive	4.47	0.36	4.22	0.56	-0.25	4.10	0.71	4.03	0.80	-0.07
Affect	4.43	0.50	4.31	0.60	-0.12	4.34	0.65	4.41	0.67	0.08
Student engagement	7.23	0.91	6.41	1.30	-0.82	6.91	1.41	6.75	1.07	-0.16
Instructional strategies	7.21	1.12	6.88	0.88	-0.34	7.18	1.32	7.40	1.22	0.22
Classroom management	7.47	0.96	7.16	1.22	-0.31	7.66	1.11	7.66	1.17	0.00

Note. PC = Primary Certification; OC = Outside Certification; and RE = Religion. Cognitive and Affect subscale are measured on a 5-point scale (1 = *Strongly Disagree*; 5 = *Strongly Agree*) and efficacy subscales are measured on a 9-point scale (1 = *Little*; 9 = *A Great Deal*). Diff is the difference score where a negative number indicates a decrease in a subscale score and a positive score indicates an improvement.

Prior to teaching, the overall range of subscale scores for both groups was highest in efficacy for classroom management (from 7.36 to 7.66). Of those scores, efficacious beliefs in religion/RE were lower among first-year pre-service teachers. Within efficacy for instructional strategies, first- and second-year in-program teachers had nearly identical moderate to moderately strong scores ranging from 6.86 to 7.40, regardless of the subject matter. The lowest subscale pre-scores were found in efficacy for student engage-

ment (from 6.69 to 7.23), and within this category, first-year ratings were higher across all subjects.

After gaining experience in teaching, these initially strong ratings in first-year scores dropped in all efficacy subgroups and subjects (PC, OC, RE), but the decline was especially apparent in OC subjects (differences from -.72 to -1.15). Here first-year scores in efficacy for student engagement and efficacy for classroom management decreased over a standard deviation and efficacy for instructional strategies decreased over a half standard deviation. In comparison, negative efficacy differences over time in the second-year group were less volatile, although the strongest declines were again in OC subjects (differences from -.16 to -.30). On a positive note, mean score differences in second year improved in RE efficacy for instructional strategies (diff = .22) as well as for PC efficacy for instructional strategies (diff = .30) and PC classroom management (diff = .21).

MANOVA

To answer the first research question regarding the extent to which each ACE group's (first, second) motivational levels varied across subjects (PC, OC, RE) over time (pre, post), six separate mixed Multivariate Analysis of Variances (MANOVA) were conducted. Within each MANOVA, ACE group was the between group independent variable (IV) and pre-test/post-test scores were the within group independent variable (IV). Of the six, three analyses used two interest subscales as the dependent variable (DV; by PC, OC, RE), and the remaining three analyses used three efficacy subscales as the DV (by PC, OC, RE). Despite the multiple analyses, alpha was set at .05 due to the study's exploratory nature.

Interest

Results indicated a significant overall group (first, second) by time (pre- vs. post-test), F (2, 104) = 3.182, $p < .05$, interaction in interest scores within primary certification subject matter. However, further univariate analyses conducted separately by dependent variable showed that these differences were not significant. Consequently, ACE group (first, second) scores for both PC interest subscales (cognitive, affective) remained relatively similar over time.

This stability, however, was not apparent in either OC or RE interest scores; interest levels in out-of-certification subjects did vary over time in both groups. Univariate analyses indicated that these differences were significant in the OC cognitive subscale, F (1, 33) = 20.474, $p < .05$, and approached significance in the OC affective subscale, F (1, 33) = 4.074, p = .052, when mean scores for both ACE groups were collapsed. More specifi-

cally, the means aggregated across ACE groups for pre and post OC scores decreased by .4 (cognitive) and .2 (affective) as seen in Figure 1.

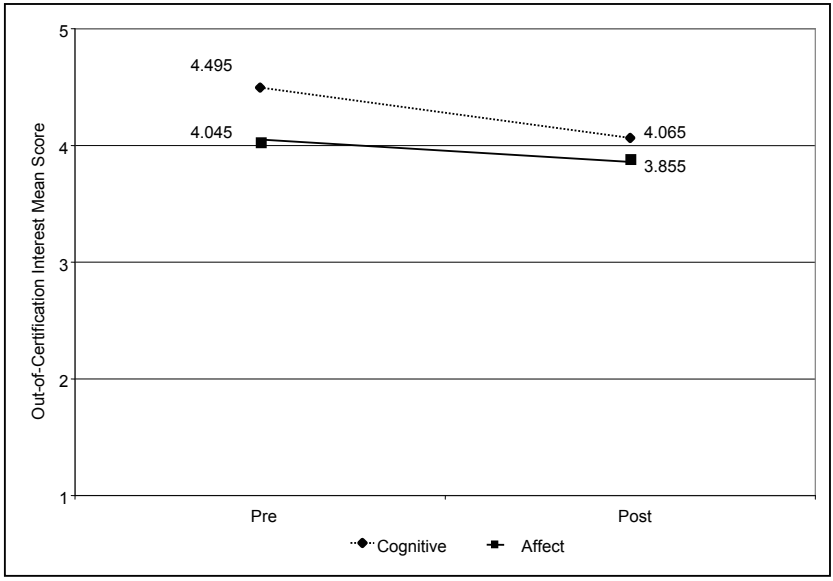

Figure 1. Out-of-certification interest pre- to post-test mean scores (first- and second-year scores collapsed)

In contrast, only first-year in-program teachers experienced a significant decrease in their cognitive interest, F (1, 52) = 4.867, $p < .05$, for religion, decreasing by .2 over time. Changes for affective interest in religion, however, remained generally consistent over time. As such, the positive emotion and value ACE participants expressed for the subject of religion endured after teaching courses in it, but cognitive interest began descending for first-year in-program teachers (Figure 2).

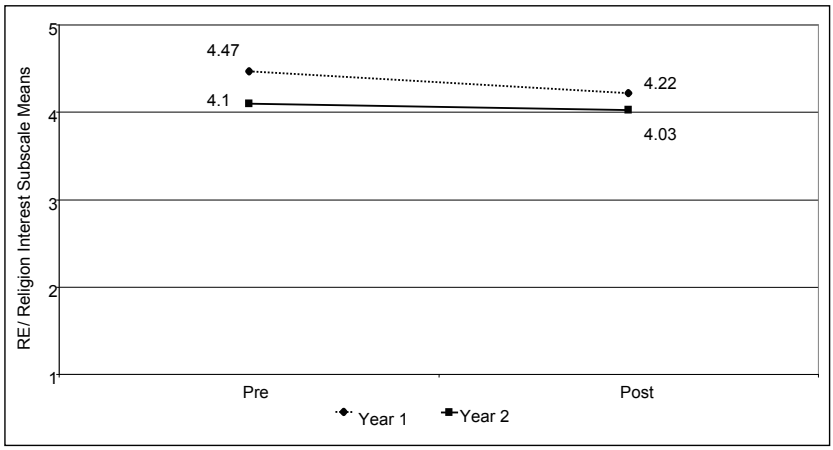

Figure 2. Religion interest pre- to post-test subscale means by year in program

The fact that no statistically significant differences were found in PC interest ratings makes sense intuitively, because ACE preservice teachers typically enter the program with an undergraduate major in their primary certification area. According to theory (Dewey, 1913), students who actively pursue a subject matter throughout 4 years of undergraduate study are likely to have acquired more knowledge and understanding in their major content area. Furthermore, those same opportunities to interact with a subject help strengthen affection and value for the content within their designated majors. Thus individuals who enter the ACE program probably possess a well-developed individual interest in their primary certification subjects. In theory, however, repetitive interactions with these PC subjects should also increase a teacher's subject matter interest—yet this did not happen in either group. Instead, teaching PC subjects neither strengthened nor eroded ACE in-program teachers' interest in their primary certification subjects.

Interest theory may also explain the uniform decrease in both cognitive and affective subject matter interest in out-of-certification (OC) subjects. Although interest empowers learning, it is sustained by knowledge. More specifically, even though participants initially expressed having moderately strong affective and cognitive interest for the OC subjects they planned on teaching, their ratings appeared to be naïve and vulnerable. When faced with the reality of classroom challenges, their positive feelings and value for OC subjects significantly diminished. Furthermore, neither preliminary levels of knowledge and understanding in the content nor affection and value for the content appeared strong enough to sustain personal levels of cognitive interest. Therefore, teachers who are required to instruct courses in which they

have limited content knowledge appear to experience loss of interest in those subjects.

In comparison, first-year ACE instructors' strong levels of affection for their religious/RE subjects were resilient, but cognitive interest was not maintained. This could relate to the fact that all ACE students who teach religion must be Catholics, as required by school policy. As one of the pillars of the program actively supports faith in Catholic tenets, there are numerous opportunities for experiences that build knowledge, positive emotion, and value for religion. However, knowledge acquired from listening to a homily or participating in a retreat may not specifically link to a teacher's course content. First-year teachers were especially vulnerable to these cognitive challenges, but second-year instructors appeared to have reconciled any cognitive/affective interest dissonance they may have previously experienced in year one.

Efficacy

Unlike the interest data, PC efficacy subscale MANOVA results revealed a significant overall interaction, $F\,(3, 103) = 4.385$, $p < .05$, and a significant time main effect, $F\,(3, 103) = 4.853$, $p < .05$. Univariate analyses conducted separately by dependent variable showed that student engagement, $F\,(1, 105) = 9.571$, $p < .05$, classroom management, $F\,(1, 105) = 6.081$, $p < .05$, and instructional strategies, $F\,(1, 105) = 7.714$, $p < .05$, all had a group (first, second) by time (pre- vs. post-test) significant interaction. Thus scores significantly varied between and within each group.

Based on the PC subscale means found in Table 1 and the pictorial presentation in Figure 3, first-year ACE teachers felt less efficacious from pre- to post-test in all three areas compared with their second-year counterparts who felt more efficacious in instructional strategies over time, but were unchanged in their efficacy beliefs for classroom management and student engagement. Therefore, it appears that ACE teachers' changes in self-efficacy depend upon the length of program stay (first- or second-year). As most ACE students enter the program with limited experience and pedagogical content knowledge, it is likely that first-year self-assessments of teaching efficacy were probably optimistic and especially impacted by the harsh realities of their subsequent classroom encounters.

Moreover, second-year PC efficacy ratings did not statistically diminish over time, because their initial assessments were lower as the result of first-year experiences. According to Cashmere (2007), some second-year teachers reformulated more appropriate efficacious beliefs in response to first-year doubts and frustrations. The replacement of naïve assumptions with accurate ratings probably led to more second-year mastery experiences, which are

known to be the most influential source of efficacy construction (Bandura, 1997). Additionally, the improvement in second-year ratings of efficacy in instructional strategies could be the result of successfully applying knowledge gained during their summer courses. In general, however, the additional course content and second-year instructional experiences did not improve their efficacious beliefs relative to classroom management or student engagement in PC subjects.

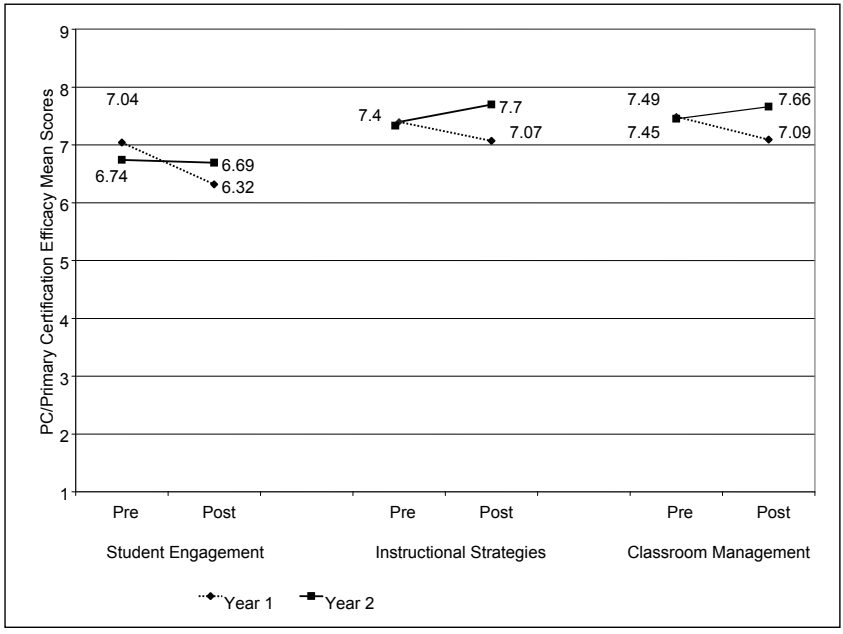

Figure 3. Primary certification efficacy pre- to post-test by year in program and subscale

Within OC subjects, there was also a significant interaction between time and ACE group for efficacy in student engagement: first-year students dropped their student engagement means, whereas second-year students remained very similar, F (1, 32) = 8.758, $p < .05$. Moreover, there was a main effect for efficacy scores in classroom management, F = 6.104 (1, 32), $p < .05$, and instructional strategies, F (1, 32) = 4.815, $p < .05$, aggregating across both ACE groups (first, second). Over time, the means of each group decreased by .5 points in both OC subscales. Univariate analyses also confirmed that the trend in different student engagement efficacy scores by group continued in religious subjects, F (1, 51) = 4.210, $p < .05$. First-year students' scores decreased .75 points, compared with second-year students' decline of .2 points. However, there were no significant differences in efficacious levels of classroom management or instructional strategies in reli-

gion. Figure 4 illustrates the change in first-year student engagement scores relative to their second-year counterparts for both OC and RE.

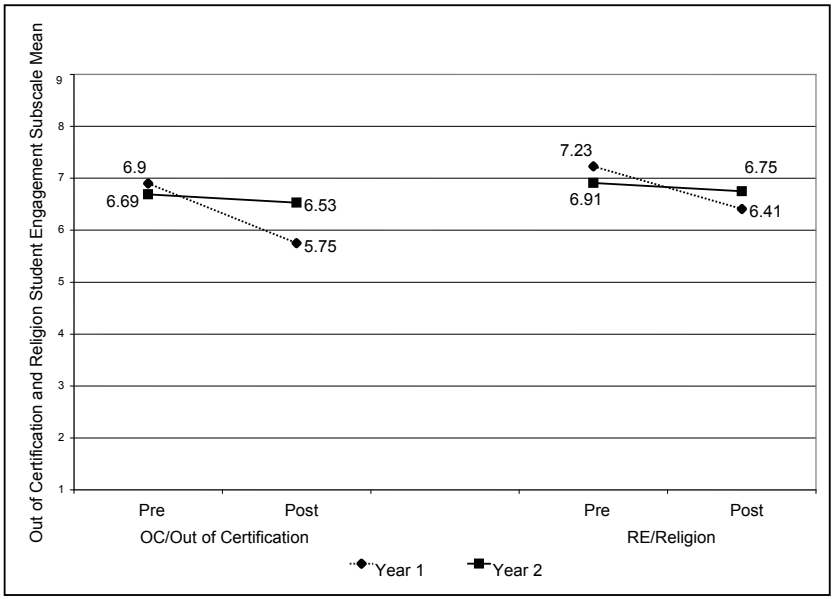

Figure 4. Efficacy student engagement pre- and post-subscale means for RE and OC

In sum, interest levels were found to significantly decrease over time for both groups in the cognitive subscale for OC subjects. Efficacious ratings in OC subjects, however, dropped over time across all three subscales in both groups, but the declines were significantly greater between first- and second-year teachers in the student engagement subscale. In religion, efficacy levels significantly declined across all three subscales for first-year students. However, second-year efficacious levels in each subscale varied according to the subject area.

To determine how pre-post subject matter interest and self-efficacy subscale scores of first- and second-year students varied by gender, school demographics, and grade level taught (Question 2), multiple MANOVAs were run. Within each of the analyses, ACE group was the between group IV and pre-test/post-test scores were the within group IV. In addition, either gender, school demographics, student body socioeconomic status (SES), or grade level was the second between group IV. The small sample sizes limited us from entering all these variables simultaneously. Half of the analyses used two interest subscales as the DV (by PC, OC, RE) and the remainder

used three efficacy subscales as the DV (by PC, OC, RE). Alpha was set at .05.

Results showed that neither interest nor efficacy scores significantly differed over time in either group by gender, school setting, or student SES and grade level. Thus the motivational levels of in-program ACE teachers were not significantly affected by their own demographic variables or the demographic factors associated with their schools or students. Previous studies in teacher interest have not specifically addressed the impact of demographic factors, so these results are provocative.

In comparison, our results resemble previous findings that similar efficacious beliefs exist in male and female teachers (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Woolfolk Hoy & Burke Spero, 2005). However, our data also conflict with research that teacher efficacy is reduced in classrooms with lower income students (Woolfolk Hoy & Burke Spero, 2005), but is higher for elementary teachers relative to their middle and high school counterparts (Soodak & Podell, 1997). These differences may reflect ACE's commitment to model Christ-like behaviors in their classrooms. Within that context, they are encouraged to view each student in every grade level as created in God's image and capable of learning, growing, and succeeding. Following Jesus' example demands that they serve every person justly and equally, regardless of demographics.

CONCLUSIONS AND IMPLICATIONS

Scant literature on teacher interest currently exists; therefore, this study provides valuable information on its role during the initial years of training. As initially conceptualized by Dewey (1899), an interested person forms a relationship with a subject or activity. The extent to which this relationship expands and deepens, however, is dependent upon acquiring content knowledge that is "principled and more cohesive in structure" (Alexander, 2004, p. 17). Although it is possible for interest to impact "engagement and comprehension independent of prior knowledge" (Schraw & Lehman, 2001, p. 30), adequate knowledge and sufficient strategies are required to progress deeply into competence (Alexander, 2004).

In this study, in-program teachers appeared to need well-developed content knowledge to simply maintain interest in their primary certification subjects during their intensive years of training. Although initial levels of PC interest endured, they did not increase. This leads us to conclude that even when an in-program instructor is both teaching and acquiring pedagogical content knowledge about a subject, neither process can guarantee the strengthening of subject matter interest. At this stage of a teacher's profes-

sional development, subject matter interest appears to mainly reflect prior levels of content expertise.

These findings also suggest that preliminary levels of interest in out-of-certification/OC subjects may typify a situational interest, which by definition is more responsive to changes in context (Schraw & Lehman, 2001). As situational interests typically require more external support (Hidi & Renninger, 2006), novice instructors of OC subjects are more likely to need the input of individuals with expertise in order to maintain or develop their subject interest. Furthermore, results confirm that the cognitive component of situational interest is particularly susceptible to instructional stress. Therefore, for teachers' subject matter interests to become intrinsic, they must acquire content knowledge.

This point is especially relevant because student interest responds to the type of interest teachers exhibit in their classrooms. For example, students tend to develop affective interest if their teachers demonstrate enthusiasm and positive regard for the content; in the same way, students who are intellectually challenged by their teachers' comprehension of the subject are more likely to formulate cognitive interest (Long & Murphy, 2005). Similarly, students who enter the classroom with a situational interest in the content depend upon the classroom context for triggering and sustaining their interest. Thus ACE teachers who demonstrate value for their subjects but lack comparable levels of cognitive interest are likely to impede the development of cognitive interest among their students. As such, the differential changes in affective and cognitive interest among these in-program teachers support contentions that these components are separate but interacting systems (Hidi & Harackiewicz, 2000).

Changes in efficacy beliefs were highly dependent on the subject area licensed in, year in the program, and efficacy area measured. This is consistent with the theoretical contours of self-efficacy theory and research that support the contextual sensitivity of efficacy beliefs. Ross, Cousins, and Gadalla (1996) and Raudenbush, Rowan, and Cheong (1992) through a multi-level analysis found that teachers change their teacher efficacy beliefs depending on their exposure to various environmental factors, such as whether a teacher instructs a high track class, students are engaged in the material, or how well the teacher feels prepared to teach in that particular content area. The fact that first-year teachers tended to decrease their efficacy beliefs relative to their second-year counterparts for all three content areas aligns with findings in more traditional programs that novice teachers' sense of efficacy is most malleable when transitioning from a pre-service teacher education program to their first year of teaching and more resistant to change as years of experience increase (Capa, 2005; Tschannen-Moran & Woolfolk

Hoy, 2007; Tschannen-Moran et al., 1998; Woolfolk Hoy & Burke Spero, 2005). Woolfolk Hoy and Burke Spero's study (2005) researched student teachers involved in a year-long field experience centered on connecting actual experience to required coursework. Gradual immersion into teaching was believed to have delayed a drop in efficacy beliefs from the time of student teaching to completion of a year of teaching. Thus immediately transitioning from an undergraduate program to the ACE program could explain why first-year efficacy scores consistently decreased relative to their second-year counterparts.

Although the primary focus of this analysis relates to ACE teachers, these findings relate to teachers in any setting. As stated previously, studies on teacher interest (Long & Woolfolk Hoy, 2006) indicate that students are likely to judge subject matter knowledge to be the primary evidence of an instructor's interest in a content area, and a teacher's interest has a significant impact upon students' development of subject matter interest (Long & Murphy, 2005), which affects learning (Schiefele, Krapp, & Winteler, 1992). Therefore, a teacher's content knowledge is indirectly linked to student motivation and learning. Likewise, the fact that teachers' sense of efficacy varied across levels of content preparedness indicates that adequate content knowledge is an essential ingredient for multiple forms of motivation.

School districts that are dedicated to providing professional development often offer training sessions, but these frequently focus on pedagogy rather than content. However, pedagogical content knowledge cannot compensate for a lack of content knowledge. Therefore, systemic support for motivated instruction should also strategically focus on efforts that increase subject matter knowledge. This assistance could include tuition waivers or reimbursements for relevant courses at local universities, scholarships to finance attendance at intensive curricular workshops, and grants that subsidize the purchase of content-rich books to supplement assigned texts. In addition, teachers with less knowledge need frequent opportunities to discuss content with teachers who have acquired more extensive subject matter expertise.

With regard to Catholic schools, results indicate that ACE in-program instructors enter classrooms with interest and self-efficacy for supporting student learning, regardless of their school's demographic context or students' socio-economic status. Yet these initial reserves of motivation are fragile and require cognitive nurture, especially in out-of-certification courses. Therefore, if administrators expect Catholic teachers to be interested and have a sense of efficacy for managing their classrooms, instructing and engaging students in content areas where they are academically unprepared, other means of support for acquiring subject matter knowledge must be developed. When schools fail to provide their teachers with an alternate

infrastructure for building subject knowledge, they can limit the range of student achievement in every subsequent course related to that domain. Thus the selection of high quality textbooks is a significant priority, especially in OC courses where both students and teachers are more likely to depend upon the content of their curriculum for substantive subject matter knowledge. Without adequate preparation, teachers who are unable to maintain their own cognitive interest in the content of their courses will probably have difficulty in cognitively challenging students in those same subjects.

This finding should be of particular concern to diocesan administrators, because instructors' cognitive interest also declined in religion courses across elementary, middle, and high school. If one goal for Catholic schools is to produce a strong Catholic identity in students, decisions about religious curriculum and how to prepare teachers for instruction in religion courses need constant scrutiny and evaluation. Consequently, we recommend that religion curriculum in all grade levels should include both intellectually challenging, relevant, and rigorous content as well as the development of devotion.

Finally, it is important to consider how our outcomes relate to the ACE program itself. By design, the program's curriculum focuses on fulfilling licensure requirements for primary certification subjects only. Thus it is beyond program parameters to assume responsibility for providing content knowledge in out-of-certification subjects. However, it is possible for ACE to nourish the spirituality of its Catholic in-program teachers by offering pedagogical solutions that halt the decline of cognitive interest in assigned religion courses. For example, ACE students can learn how to enrich less rigorous curriculum and access other sources of supplemental religious content material. As the program currently includes a frequent diet of informal opportunities to learn cognitively interesting religious subject matter, which builds efficacious beliefs in one's own ability to engage with religious content, ACE administrators and faculty can use those informal sessions to explicitly model pedagogy useful in religion courses. Moreover, it is also possible for ACE administrators to create a database of general subjects covered in elementary, middle, and high school religion classes and intentionally incorporate some of those topics into their formal curriculum and informal instruction, such as retreats and homilies. These efforts would not only simultaneously build cognitive schema and interest for the content of upcoming school assignments, but also provide additional vicarious instructional experiences, which contribute to sense of efficacy.

The value of these dual outcomes is especially significant, because the program's success at increasing efficacious beliefs of second-year graduate students relative to instructional strategies in PC subjects was not apparent

in other content areas. Thus in-program teachers not only need to observe instructors who mentor them in their certification area; they also require input from those who have higher levels of expertise in out-of-certification subjects—and this process can occur in church or at the dinner table. Furthermore, as the beliefs of both groups of in-program instructors declined in regard to their ability to engage students, the ACE program needs to proactively provide more positive affect, socially persuasive feedback, and vicarious and mastery experiences across all content areas. Opportunities for strengthening this sense of efficacy in teachers could potentially exist every time an ACE student receives instruction that is personally engaging—even in informal contexts—if the process of becoming engaged is reflected upon and explicitly analyzed. It is especially vital for first-year in-program teachers to utilize both informal and formal venues of instruction for they require consistent collaboration to learn how to engage students, gain instructional advice, and acquire classroom management techniques. As such, the more often a novice teacher watches, is observed by, and receives feedback from effective teachers, the higher his or her sense of efficacy can become.

With regard to suggestions for future research, it might be helpful to determine whether the four sources of efficacy impact student engagement differently relative to instructional strategies and classroom management. Further, if level of support in conjunction with collaboration and quality of resources are important factors in explaining self-efficacy beliefs, more information is needed to determine if these school components also positively impact efficacy beliefs in student engagement. Moreover, because the data suggest that ACE group participation exerts a powerful influence over the individual, this exemplifies what Bandura (1997) termed perceived collective efficacy. Bandura defined it as "a group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments" (p. 475). Therefore, a third direction for future research could be to examine personal views on the capability of the ACE group to achieve collective or individual goals, and the extent to which the group inhibits or enhances personal motivation and orientation to learning.

Finally, this study adds to the literature by examining how beliefs in one's classroom management, student engagement, and instructional strategies as measured by the Teachers' Sense of Efficacy Scale can change over time. However, as our setting is an alternative teacher preparation program, the application of our findings may be limited to similar non-traditional contexts. Likewise, it may be difficult to accurately compare the responses of these participants with in-service teachers from non-religious schools, because of the distinctive tenets on which this program is built. As such, it would be inappropriate to generalize the findings related to teaching religion

to other subjects as religious topics can evoke unusually deep and personally provocative responses. However, we heartily recommend further explorations into how a teacher's interest and sense of efficacy in classroom management, student engagement, and instructional strategies are impacted by different teacher experiences, subjects, and school characteristics.

Additional limitations arise from our measures and statistical procedures. For example, the interest and efficacy subscales were constructed from conceptual arguments. As such, their construct validity and how they might differ across PC, OC, and RE needs to be investigated. Future studies could also look at change across time and content areas simultaneously within a structured longitudinal framework that incorporates periodic and progressive responses.

In sum, many educational psychology texts used in the preparation of teachers include instruction on how to motivate future students by covering topics such as attributions, expectations, goals, interest, and self-efficacy. However, it is equally important to acknowledge and support the development of these motivational variables within pre-service teachers. This process can be helped by incorporating regular motivational assessments into training courses, which track symptomatic changes and trends within individuals and cohort groups. Such information can reveal areas deserving of encouragement as well as problems that require immediate strategic intervention. The result of these efforts will directly benefit in-program teachers and indirectly profit their students, whose learning is continually impacted by a teacher's level of motivation.

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