The Persuasive Characteristics of Teachers on Conceptual Change across Health Classrooms

Master’s Thesis

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By

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Abstract

Educational Psychology research has noted the similarities between conceptual change and persuasion. Though some researchers (e.g. Murphy & Alexander, 2004) have cut across literatures to make the case for serious scholarly dialogue on persuasion in classrooms, many facets of persuasion in the classroom remain to be explored. The present investigation (N = 633) explores the link between the persuasive characteristics of teachers (i.e. teacher affinity and teacher credibility) and student gains in knowledge and valuing of learning about HIV and pregnancy prevention across classrooms. Results marshaled evidence for the role of persuasive characteristics in producing conceptual change in students. Above and beyond individual background characteristics, teacher credibility was positively related to increases in knowledge across classrooms, whereas teacher affinity was positively related to increases valuing of learning across classrooms. Future directions and implications for practice are discussed.
Dedication

I dedicate my work to my Heavenly Father. I also dedicate my work to my loving family. To my parents, Lisa Gray and Raymond Gray: You have pushed me to be the best I can be. I love you and I appreciate the countless sacrifices (seen and unseen) that have brought me to this point in my life. To my brother, Jamal Gray: You have taught me that I can be an example to others, and that being positive is not only about self, but it is about others who watch you. I also dedicate this to my supportive extended family, my Fraternity brothers, and my friends who have pushed me and molded me into the person I am today—thank you.
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Chapter 1: Introduction and Review of Relevant Literature

Regardless of students’ individual differences in knowledge and valuing of learning about HIV and pregnancy prevention, health teachers have a mission to promote safe and healthy lifestyles among their students. Learning outcomes have been widely examined in terms of traditional academic subjects such as math and reading. For students enrolled in high school health classrooms, learning outcomes have implications for their life choices as these adolescents transition into adulthood. To this end, it is necessary that education researchers explore contextual factors that produce conceptual change in knowledge and motivational beliefs related to the content of health education courses. With rare exception (Alexander, Fives, Buehl, & Mulhern, 2002), research on the persuasive mechanisms of classroom learning outcomes has remained relatively unexplored. The present study uses a persuasive paradigm to explain how students’ perceptions of the teacher (i.e. teacher credibility and teacher affinity) explain differences in student increases in knowledge and value for learning about HIV and pregnancy prevention across classrooms. First, I review the extant research on how social contexts facilitate conceptual change in educational settings, while highlighting the initial work on classroom teaching as persuasion; I then describe the significance of studying knowledge and value beliefs in the context of the health classrooms; next, I explain the processes by which persuasion occurs in the classroom, and finally, I describe two persuasion
characteristics of teachers that may promote belief change and knowledge gain related to HIV and pregnancy prevention.

*The Role of Classroom Context in Promoting Conceptual Change*

The social context of the classroom has been studied extensively in the field of educational psychology. Researchers now understand that learning is much more than ‘cold cognition’ (Pintrich, Marx, & Boyle; 1993). In other words, this process involves more than information processing; it involves personal choice, needs and motivational beliefs (Pintrich, 1990; Pintrich & De Groot, 1990). These researchers also understand that the climate or structure of the classroom contributes immensely to students’ conceptual changes in knowledge and motivational beliefs. *Conceptual change* refers to revisions in personal representations that are often precipitated by purposeful educational experiences (Murphy & Mason, 2006).

Many studies have demonstrated the ways in which the classroom context impacts conceptual change. Research on classroom goal structures has demonstrated that whereas mastery goal structures are related to outcomes such as sophisticated learning strategies, a deeper conceptual understanding of course material and increased persistence; performance goal structures are associated with academic cheating, the use of surface-level cognitive processing strategies, and decreased willingness to engage in challenging tasks (Ames & Archer, 1988; Anderman, Griesinger, & Westerfield, 1998; L. H. Anderman, 1999; Midgley, 2002; Turner Midgley, Meyer, Gheen, Anderman, Kang, & Patrick, 2002). Research on autonomy-supportive classrooms has demonstrated that such
environments can facilitate students’ intrinsic motivation, increased valuing of education, and more positive academic self-perceptions (Deci, Vallerand, Pelletier, & Ryan, 1991); in contrast, classrooms which are controlling in nature may be less than ideal in terms of fostering students’ interests (Midgley & Feldlaufer, 1987). Research has demonstrated that students’ personal efficacy toward success at an academic task is improved as a result of scaffolding and modeling by teachers (as well as other students) (Bandura, 1997; Schunk, 1989; Schunk & Hanson, 1985). Indeed, there are several other variables (e.g. school belonging) that are related to students’ learning outcomes (Anderman, 2002; L. H. Anderman & Anderman; 1999). In each of the aforementioned findings, however, the teacher can be seen as the major contributor to the motivational climate of the classroom.

**Persuasion and Conceptual Change**

Recent literature has pointed out the similarities in the construct referred to as **conceptual change** and the construct of **persuasion**. Although research on these two constructs has been conducted very differently (Woods & Murphy, 2001), researchers have begun to synthesize literature across both constructs to illustrate how educational contexts promote changes in students (Murphy & Mason, 2006). Alexander and colleagues (Alexander et al., 2002) took an initial step in examining the pedagogical approach of “teaching as persuasion.” Consistent with persuasion literature (e.g. Petty & Cacioppo, 1986), Alexander et al. demonstrated that students’ knowledge, beliefs, and interests can increase as a function of compelling and thought-provoking lessons. The researchers made science lessons persuasive by delivering scientific facts and principles to students in a rich historical, thought-provoking way. Murphy and Mason (2006) stated
that “there is much work to be done in the area of classroom interventions that will promote knowledge and belief change” (p. 319). Knowledge and belief change in health classrooms are particularly important, since adolescents’ values and knowledge of HIV and pregnancy prevention can have an immediate impact on their life trajectories. The present research extends the thread of Alexander et al. (2002) by examining the role of persuasion in students’ increased knowledge and valuing of HIV and pregnancy prevention.

Learning and Motivational Beliefs

One established conceptualization of adolescents’ motivation to learn is the expectancy-value model. Proposed by Eccles and colleagues (Eccles & Wigfield, 1995; Wigfield & Eccles, 1992; 2000; 2002), the model was originally designed to evaluate the academic motivation of students in mathematics. Studies examining expectancies and values have since proven useful in other domains of formal education, such as reading (2002). In the present study, I examine the value component, since achievement value predicts engagement in a learning activity when participation is not required (Wigfield et al., 1992). For instance, expectancy-value theory predicts that a student who values learning about HIV and pregnancy prevention will be more likely to seek further information on this topic even after completing a required health education class. To this extent, the valuing of learning about HIV and pregnancy prevention complements a student’s knowledge on the topic by maintaining his or her interest in safe practices. With rare exception (e.g. Anderman, Lane, Zimmerman, Cupp, & Phebus, 2008), students’ valuing of learning has remained unexamined in the context of health classrooms.
Task value has four sub-components: attainment value, intrinsic value, utility value, and cost. *Attainment value* is the extent to which success at an academic task validates a student’s self-concept. For instance, if a student identifies with being knowledgeable about HIV and pregnancy prevention, he or she may be more likely to engage in learning about the topic in order to confirm pre-existing self-perceptions.

*Intrinsic value* is how much the learning task appeals to the student on a gut-level. In other words, this would be the sheer satisfaction a student feels when engaging in class discussions on maintaining a healthy lifestyle. When a student views success at a particular learning task as useful toward reaching a later goal, the student is more likely to engage in the activity (Wigfield et al., 1992). This is considered *utility value*. For example, a student might take learning about HIV and pregnancy prevention very seriously if he or she believes this knowledge will come in handy in during real life situations. *Cost* is the consideration of what a student must sacrifice in order to engage in the task (Eccles et al., 1995). When students consider taking time out to learn about HIV and pregnancy prevention, they may think about what other activities they are sacrificing in order to do so. Wigfield and Eccles (2002) argue that “it is difficult if not impossible to understand students’ motivation without understanding the contexts they are experiencing” (p.128). Therefore, in the present study, I examine how the classroom context, as created by the teacher, is related to knowledge and the valuing of learning about HIV and pregnancy prevention. I turn to the persuasion literature to explain the processes by which this may occur.

*Teachers as Sources of Persuasion*
Persuasion is a popular way by which individuals adopt and internalize the information, beliefs, and values of others. Although we typically view persuasion as being relevant to careers such as politics, sales, and law, persuasion may also be relevant to careers in education. Though social exchange in the classroom does have reciprocal components (Davis, 2003), implicit in the agenda of formal education is the notion that the teachers will transmit knowledge about a subject, as well as valuing of learning about that subject to a classroom of students. Viewing classrooms as persuasive contexts might prove useful to understanding the knowledge and values students take away from the classroom. *Persuasion* refers to “any procedure that has the potential to change someone’s mind” (Briñol & Petty, 2009, p.2). In the classroom context, the teacher (i.e. the source) has the potential to change the mind of the students (the recipient) through his or her message.

Attitude change can occur by way of central and peripheral routes (Petty & Cacioppo, 1981). The *central route* involves the careful consideration of relevant issues when evaluating information. Favorable thoughts about a given issue may be elicited after acknowledging the merit and cogency of a particular stance. For example, before forming a belief about the use of various contraceptives, a student enrolled in a health education course might ask her teacher about STD contraction rates in the United States. We know however that people are not always interested in thoroughly evaluating “the facts.” In such cases, individuals have a tendency to rely on contextual information to draw conclusions about an issue while exerting minimal effort. This is known as the *peripheral route*, where we base our stances on cues given from the persuasive “source.”
For example, if the teacher presents a long list of reasons why people should stay away from ecstasy pills, a student may base her decision against using the drug on the number of reasons on the list without evaluating their merit. The present study does not examine the components of persuasive messages (e.g. using the historical relevance of a scientific breakthrough in hopes of promoting interest in physics among students). Such research has been outlined elsewhere (Alexander et al., 2002; Murphy & Mason, 2006). Instead, the present study examines the environmental cues associated with the delivery of the content, which increase the potency of the message, itself.

The Elaboration Likelihood Model of persuasion (ELM; Petty & Cacioppo, 1986) is a multiprocessing theory that acknowledges the role of both routes in producing attitude change. The model holds that traits typically embodied in persuasive sources (i.e. being perceived as credible, likable, similar, and powerful) work in combination with persuasion processes to influence attitudes (see Petty & Briñol, 2006). To this extent, perhaps the persuasive characteristics of teachers may be related to the value and students place on learning in the classroom. One implication of the research on source factors in persuasion is that the persuasive characteristics of a teacher may operate differently from student to student. The work of Briñol et al. (2009) suggests that the persuasive traits of the teacher can affect how deeply students consider the merits of the information they are taught, but also bias the direction of thoughts generated (i.e. when students are carefully considering “the facts”) or be used as a heuristic (i.e. when students do not engage in effortful processing). Thus, looking at teachers as “sources of persuasion” might provide new insights on the processes by which teacher characteristics impact learning outcomes.
The Communications literature informs the framework for the present study, with the inclusion of two established constructs that assess students’ perceptions of teachers, in order to make the case for the role of persuasive characteristics in producing positive learning outcomes.

*Teacher Credibility and Teacher Affinity as Persuasive Characteristics*

The importance of teacher-student relationships cannot be overstated. Such relationships have been examined from a variety of perspectives (for a review, see Davis, 2003). Researchers have demonstrated that teacher-student relationships are especially vital in school-based prevention and interventions (Hamre & Pianta, 2006). For example, strong and supportive relationships have been linked to desired student outcomes such as increased motivation, competence, and academic success (Wentzel, 1997). Related to both teacher-student relationships and basic persuasion are the constructs of credibility and likability. Specifically, teacher credibility and teacher affinity are two characteristics that are undoubtedly important in terms of relationships, yet both constructs are seen as fundamental qualities of “the source” in persuasion literature.

Dating back to Aristotle, ethos (or credibility) has been seen as the most powerful resource available to a speaker (Cooper, 1932). Since then, several researchers have documented the critical, yet complex role of source credibility on attitude change (e.g. Chaiken & Maheswaran, 1994; Heesacker, Petty, & Cacioppo, 1983; Hovman & Weiss, 1951; Kelman & Hovland, 1953; Tormala, Briñol & Petty, 2006). For example, Petty
(1997) noted that source credibility may enhance the learning of persuasive arguments. Other research has documented the role of source credibility on the level of confidence a person has in his or her own attitudes (Briñol et al., 2009). This construct has proven useful in the educational context as well. The concept of teacher credibility refers to the “believability” of a teacher (Frymier & Thompson, 1992). Aristotle conceptualized ethos in terms of intelligence, character, and goodwill (1932). Measures of teacher credibility have remained consistent with Aristotle’s conceptualization, but have come to view ethos as a combination of competence and character (McCroskey & Young, 1981). Competence refers to a student’s perceptions of the teacher’s knowledge and experience; whereas character is an evaluation of the teacher’s moral fiber. For example, in evaluating the character of a teacher, a student might question how good of a person the teacher seems to be, or whether the teacher seems to be operating in the best interests of students (1981). Teacher credibility has been shown to positively impact the process of learning (Teven & McCroskey, 1996) as well as motivation to learn (Pogue & AhYun, 2006).

In general, people employ a variety of strategies to get others to like them (McCroskey & Wheeless, 1976). The persuasion literature tells us that the likability of a source impacts the magnitude of attitude change (Briñol et al., 2009). When individuals employ affinity-seeking strategies such as positive self-disclosure, positive reinforcement, and compromising, they are seen as more likable (Bell & Daly, 1984). In an educational context, the extent to which a student perceives the instructor as likable is known as teacher affinity. Research suggests that teachers are often capable of
influencing how much students like them (Dolin, 1995). Previous work has examined the effects of teacher affinity on learning and motivational outcomes. For example, teacher affinity is related to perceived cognitive learning (Frymier, 1994), students’ feelings about the subject matter (Gorham, Kelley, & McCroskey), and motivation to study (Beebe & Butland, 1993). Further, Frymier and Thompson (1992) found a positive association between teachers who seek affinity and students’ perceptions of teacher credibility. Examining these teacher characteristics (or source traits) from a persuasion perspective could explain how these distinct characteristics operate in similar ways to promote positive changes in knowledge and motivational beliefs across classrooms.

In her review of student-teacher relationships, Davis (2003) noted: “It is because of this focus on the teacher that much of the research on student–teacher relationships within the motivation literature has focused on dimensions that fall within teachers’ ‘control’ (e.g., class context, climate, expectations, behaviors, tasks, and strategies)” (p. 212). Following Davis’s critique of the literature on student-teacher relationships, I argue that teacher affinity and teacher credibility are not student-teacher relationships—particularly because the term “relationship” implies a bi-directional measurement of a student’s feelings toward the teacher, as well as the teacher’s feeling toward that particular student. We should instead view these construct strictly as changeable characteristics embodied by the teacher, which may impact knowledge and values.

The Present Study

From an elaboration likelihood model perspective, we understand that the persuasive characteristics of a teacher may, through processes that vary from one student
to the next, augment the magnitude of conceptual change. Consistent with past motivation research examining learning outcomes related to HIV and pregnancy prevention (e.g. Anderman et al. 2008), I expect student-level differences in gains of knowledge and value beliefs related to HIV and pregnancy prevention; gender should predict increases (more for females than males), attitudes towards waiting to have sex should predict increases, positive expectancies should predict increases, lower sensation seeking should predict greater gains, less prior sexual experience should result in greater gains, less normative peer sexual behavior should lead to greater gains, and ethnicity should predict increases (more for African American students than others, since this group experiences greater a prevalence in HIV contraction; CDC, 2008). The research on teacher credibility and teacher affinity has demonstrated the important relation of these teacher characteristics to individual learning outcomes; however, the aforementioned studies have not examined the relations of such constructs across multiple classrooms contexts with an established motivational outcome measure. In the present study, I predict that, above and beyond individual differences, the classroom reputation of the teacher as likable and a credible source of information will explain variability in knowledge and value belief across classrooms. Therefore, I expect to that, across health classrooms, the persuasive characteristics of teachers (i.e. teacher affinity and teacher credibility) will be related to greater knowledge and valuing of learning about HIV and pregnancy prevention, after controlling for student-level predictors and baseline measures of these constructs.
Based on previous research on classroom context, conceptual change, and persuasion, I specifically hypothesize that:

1. The classroom reputation of teachers as likable (i.e. teacher affinity) will be positively related to increased knowledge and value of learning about HIV and pregnancy prevention at Time 2, after controlling for gender, attitudes toward waiting to have sex, expectancies, sensation-seeking, prior sexual experience, ethnicity, and the covariates at Time 1.

2. The classroom reputation of teacher as a credible source of information (i.e. teacher credibility) will be positively related to increased knowledge and valuing of learning about HIV and pregnancy prevention at Time 2, after controlling for gender, attitudes toward waiting to have sex, expectancies, sensation-seeking, prior sexual experience, ethnicity, and the covariates at Time 1.
Chapter 2: Method

Sample

Participants in the present study were from seven high schools in two geographically similar locales in the Midwest. The sample consisted of 633 high school students enrolled in freshman health education classes. The sample is almost divided evenly in terms of gender (47.1% male and 52.9% female). Participants ranged from ages 13-18 years old (82.4% of the sample were 14 and 15 years of age), and most were in ninth grade. In terms of ethnicity, 50.8% were Caucasian, 37.1% African American, 1% Asian/Pacific Islander, 3.1% Latino, 1% Native American, and 5.5% reported being multiracial or of other ethnic backgrounds.

Reducing the Risk Curriculum

High schools in the present study were recruited as part of a health education intervention on HIV and pregnancy prevention. All students received an established skills-based HIV and pregnancy prevention curriculum called Reducing the Risk (RTR; Barth, 1996). RTR is a curriculum endorsed by the Centers for Disease Control and Prevention’s Division of Adolescent and School Health. The RTR curriculum has been proven effective in reducing HIV-related risk behavior on many occasions (1996). Although schools were randomly assigned to different two different types of instructional methods, neither method significantly predicted the
dependent variables in the present study; consequently, curriculum type was excluded from the analyses.

The RTR intervention consisted of 14 modules containing specific strategies and activities designed for each class session. The curriculum students received focused primarily on practicing strategies that could be used to avoid risky sexual encounters such as unprotected sex. RTR was not designed to directly impact how much students value learning about HIV and pregnancy prevention, or the amount of knowledge students retain.

Measures

Surveys using five and 7-point Likert scales were administered to all participants at two time points. At baseline, students completed 56 items before beginning the RTR modules. Approximately three weeks after completion of the 14-module RTR curriculum, students completed an 80-item survey. Demographic data were collected at the first survey administration, including gender, ethnicity, and prior sexual experience (i.e., whether or not the student had sexual intercourse). Gender was coded as a dummy variable, where 1 = male and 2 = female. Since African Americans in particular are at high risk for contracting HIV (CDC, 2008), ethnicity was coded as 0 = other and 1 = African American. Prior sexual experience was coded as 0 = virgin and 1 = non-virgin. Other baseline measures were sensation seeking, expectancy and valuing of learning about HIV/pregnancy prevention, attitudes towards having sex, normative peer sexual behavior, and HIV/pregnancy prevention knowledge. Descriptions of the survey measures and their psychometric properties are presented in Table 1. At the second data
collection, students’ perceptions of teacher credibility and affinity were assessed, as well as their knowledge and valuing of learning about HIV/pregnancy prevention for a second time. All items used in the present study were pilot tested in a separate sample of over 300 adolescents.
Chapter 3: Results

Means, standard deviations, and correlations are presented in Table 2. Given the hierarchical structure of the data (students nested within health classrooms), I used multilevel analysis to assess the relations of teacher credibility and affinity to increases in knowledge and value of learning about HIV and pregnancy prevention.

I used HLM Version 6.04 (Raudenbush & Bryk, 2002) to conduct the multilevel analyses. I predicted that the classroom reputation of teachers as likable (i.e. teacher affinity) and credible (i.e. teacher credibility) would be positively related to increased knowledge about HIV and pregnancy prevention at Time 2, after controlling for gender, attitudes toward waiting to have sex, expectancies, sensation-seeking, prior sexual experience, ethnicity, and the covariate at Time 1. Since the present study examines contextual variables, I first estimated conditional models for both dependent variables (similar to traditional ordinary least squares regression) using Level 1 predictors collected at baseline.

The student-level models are expressed by the following equations, with all level 1 predictors being collected at Time 1:

Value at Time 2 = β_{0j} + β_{1j} (gender) + β_{2j} (attitudes about sex) + β_{3j} (expectancy) + β_{4j} (value at Time 1) + β_{5j} (sensation seeking) + β_{6j} (prior sexual experience) + β_{7j} (knowledge at Time 1) + β_{8j} (peer sexual behavior) + β_{9j} (ethnicity) + r_{ij}.

Knowledge at Time 2 = β_{0j} + β_{1j} (gender) + β_{2j} (attitudes about sex) + β_{3j} (expectancy) + β_{4j} (value at Time 1) + β_{5j} (sensation seeking) + β_{6j} (prior sexual experience) + β_{7j} (knowledge at Time 1) + β_{8j} (peer sexual behavior) + β_{9j} (ethnicity) + r_{ij}.
The intercepts were allowed to vary between classrooms. All level 1 variables were group-mean centered. I used the conditional models to assess the degree of residual intraclass correlation among the classrooms. The residual ICC is the variability that can be attributed to between-classroom differences, controlling for the presence of Level 1 predictors (see Snijders & Bosker, 1999). Results revealed that a significant proportion of the variance in both dependent variables can be attributed to differences among classrooms. Specifically, 6.5% of the variance in value at Time 2 occurs between classrooms, $\chi^2 (26) = 54.61, p < .001$. Similarly, 9.8% of the variance in knowledge at Time 2 occurs between classrooms, $\chi^2 (26) = 75.17, p < .001$ (see Table 3).

In terms of contextual variables, individual measures of teacher affinity and teacher credibility were aggregated by classroom, and then added to the final multilevel models as predictors of classroom-level variance in the intercepts of value and knowledge. There were 28 health classrooms in total, with an average of 23 students in each. All Level 1 variables were retained in the contextual models regardless of their contribution to variation in Time 2 knowledge and value at either level of analysis. Again, I hypothesized that teacher credibility and affinity would account for valuing and knowledge of HIV/pregnancy prevention across classrooms, after controlling for the measures at baseline. The between-classrooms models are expressed by the following equation:

$$
\beta_{0j} = \gamma_{00} + \gamma_{01} \text{ (Teacher affinity)} + \gamma_{02} \text{ (Teacher credibility)} + u_{0j}.
$$
Table 4 provides a summary of the findings for the final contextual models of value and knowledge.

Overall, the contextual variables of teacher affinity and teacher credibility accounted for 28.15% ($R^2 = .2815$; Bryk & Raudenbush, 1992) of the variance in mean valuing of learning about HIV and pregnancy prevention at Time 2. As predicted, teacher affinity was associated significantly and positively with mean classroom increases in value at Time 2 ($\gamma_{01}$); which suggests that, across classrooms, valuing of learning about HIV and pregnancy prevention may be facilitated by teacher affinity. Teacher credibility was not statistically significant ($\gamma_{02}$). Significant variability between classroom means ($\tau_{00}$) for Time 2 value remains to be explained, $\chi^2 (24) = 43.36$, $p<.01$.

The contextual variables explained 15.31% ($R^2 = .1531$) of the variance in mean knowledge about HIV and pregnancy prevention at Time 2. As predicted, teacher credibility was associated significantly and positively with mean classroom increases in knowledge at Time 2 ($\gamma_{02}$); which suggests that, across classrooms, knowledge about HIV and pregnancy prevention may be facilitated by teacher credibility. Teacher affinity was not statistically significant ($\gamma_{01}$). There are still considerable differences between classrooms ($\tau_{00}$) that might be explained by other level 2 variables, $\chi^2 (24) = 62.11$, $p<.001$. 

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Chapter 4: Discussion

In the present study, I examined the relations of the classroom-level teacher reputations of affinity and credibility with students’ knowledge and valuing of HIV and pregnancy prevention. Results demonstrated support for the notion that the persuasive characteristics embodied by teachers produce greater increases in learning outcomes in adolescents. Above and beyond individual background characteristics, teacher credibility was positively related knowledge across classrooms, whereas teacher affinity was positively related to valuing of learning across classrooms.

The Contribution of Examining Persuasive Characteristics at the Classroom Level

There is no “one size fits all model” to explain conceptual change. Educational research has recently documented the dynamic process of persuasion at the student level (Murphy & Alexander, 2004). From an Elaboration Likelihood Model perspective (Petty & Briñol, 2006; Petty & Cacioppo, 1986), the process by which persuasive characteristics of teachers produce student gains in value and knowledge may vary tremendously. Conceptual change in classrooms via these persuasive characteristics may occur in one of five ways. First, teacher affinity and teacher credibility may be serving as peripheral cues for students learning about HIV and pregnancy prevention. For example, if a student likes his or her teacher, it is easier for the student to value what the teacher values. Not only
may the student in this classroom cooperate, the student may grow to internalize the messages that the teacher is trying to convey. Second, teacher affinity and teacher credibility may serve to make issues about HIV and pregnancy prevention more relevant to students. In other words, teachers’ messages may possess a “personal touch” when students view them as more likable and credible. Third, teacher affinity and credibility may increase students’ motivation and ability to think about information related to HIV and pregnancy prevention. Intuitively, it makes sense that when we perceive someone as likable or credible, we are less likely to take their messages with “a grain of salt;” rather, we are likely to consider heeding their advice at the very least.

Fourth, teacher affinity and teacher credibility may serve to bias the nature of thoughts that students have about HIV and pregnancy prevention. Even for students who carefully consider all the “pros” and “cons” before adopting a particular attitude or belief, messages about HIV and pregnancy prevention from teachers who are likable and credible might help students generate an increased number of “pros” for learning about the topic, and decrease the number of “cons.” The last explanation is reflective in nature: When students are thinking about their own learning in classrooms, it is likely that teacher affinity and teacher credibility increase the confidence student have about the information they are learning about HIV and pregnancy prevention. When students learn from teachers who are likable and credible, they can have confidence that they are learning legitimate, relevant information. Additionally, when teachers use affinity-seeking strategies such as positive self-disclosure, positive reinforcement, and compromise (Bell & Daly, 1984), students may perceive teacher messages as authentic;
consequently, they may perceive HIV/pregnancy prevention as something worth exploring long-after their health class is over. Thus, although research indicates that the process of persuasion may be different from student-to-student and may vary across classrooms, the persuasive characteristics examined in this study are areas that teachers can improve upon. Whereas other researchers have argued the case for persuasion at the student level of analysis, the present study demonstrates the role of persuasion at the contextual level. The present study highlights the relation of persuasive characteristics to knowledge and value beliefs, after controlling for individual processes.

Limitations

The present study has a number of limitations that must be acknowledged. First, all data collected in the present study are self-report. Students may therefore not feel comfortable answering sensitive questions. Many precautionary measures were taken during data collection to minimize such risks. For example, no identifying information was contained on the surveys. Additionally, students were sufficiently spaced apart to answer privately. Multiple versions of the same survey were also used. Second, both teacher affinity and teacher credibility were collected during the second wave of data collection (at the same time as the dependent variables). Since students’ perceptions of their teachers as likeable and credible had not yet been formed during the first survey administration (that is, at the beginning of the academic term), but were likely formed before the second survey administration, a directional relation between teacher characteristics at Time 2 and learning outcomes is assumed. Future longitudinal studies on the persuasive characteristics of teachers may help to better explain these findings.
Last, Turner and Meyer (2000) noted that “contextualized findings provide more externally valid information for teachers because they help explain the why and how behind student-teacher interactions” (p. 71). The present study provides an example of a deductive approach to understanding how persuasive characteristics operate in the classroom. Yet Turner and Meyer note, “what our constructs mean in a particular setting must inform any investigation of context” (p. 79). Thus, my quantitative analysis of teacher credibility and teacher affinity is necessary, but not sufficient for understanding the ways in which these constructs operate to increase learning outcomes in the classroom.

Conclusion and Implications

Murphy and Alexander (2004) noted that “there is much that we need to know about the persuasion process in the classroom before its potential can be more fully realized in the educational environment” (p. 357). If health classrooms are true to their goal of promoting healthy lifestyles among adolescents, it is incumbent upon motivation researchers to understand the role of persuasion in the classroom context—particularly as it relates to the study of HIV and pregnancy prevention. In general, the context of health education classrooms has been understudied by academic motivation researchers (Noar, Anderman, Zimmerman, & Cupp, 2004). The present investigation extends the literature by demonstrating that persuasive characteristics embodied by teachers can impact knowledge and value beliefs related to HIV and pregnancy prevention. While demonstrating the broader applications of an established motivational beliefs construct to health education, the present study builds on contemporary educational psychology
persuasion literature by demonstrating how the persuasive characteristics of teachers are related to differences in HIV and pregnancy prevention across classrooms.

L.H. Anderman, Andrzejewski, & Allen (2009) found an emerging social-relational theme among four teachers nominated by their students as creating highly adaptive classroom contexts. The researchers found that individual teacher practices on this dimension did not fit neatly into any established theoretical framework. For example, L. H. Anderman et al. (2009) reported gender differences in teachers’ use of humor toward students. This raises a critical point for understanding how persuasive teacher characteristics look in practice. Every teacher (or any person for that matter) has a unique set of qualities or strengths. Similarly, each person may go about persuading an audience in his or her own unique way. Most likely, whether they realize it or not, the teachers who are perceived by students as likable and credible are the ones who are most effective at playing on their strengths to get students to like them and to be perceived as credible sources of information. In the context of health classrooms especially, if teachers remain cognizant of classroom persuasion and how it operates, particularly the characteristics of teacher affinity and credibility, teachers may be able to play up their strengths to more effectively increase conceptual change among students, as well as positively impact their life trajectories.
References


Anderman, L. H. (1999). Classroom goal orientation, school belonging and social goals as predictors of students' positive and negative affect following the transition to middle school. *Journal of Research and Development in Education, 32*(2), 89-103.


Appendix A: Tables

Table 1.

*Descriptions and Psychometric Properties of Measures*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Items</th>
<th>Baseline $\alpha$</th>
<th>Follow-up $\alpha$</th>
<th>Sample Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes toward Waiting to Have Sex</td>
<td>4</td>
<td>0.82</td>
<td>--</td>
<td>&quot;I believe it's okay for people my age to have sex with a steady boyfriend or girlfriend.&quot;</td>
</tr>
<tr>
<td>Sensation seeking (Zimmerman &amp; Anderman, 2002)</td>
<td>8</td>
<td>0.81</td>
<td>--</td>
<td>&quot;I like wild parties.&quot;</td>
</tr>
<tr>
<td>Peer Sexual Behavior (Zimmerman &amp; Anderman, 2002)</td>
<td>5</td>
<td>0.84</td>
<td>--</td>
<td>&quot;Are waiting until they are married to have sex.&quot;</td>
</tr>
<tr>
<td>Expectancy (adapted from Eccles, Adler, &amp; Meece, 1984; Wigfield et al., 1991)</td>
<td>2</td>
<td>0.75</td>
<td>--</td>
<td>&quot;How good would you be at learning something new about the prevention of pregnancy and HIV?&quot;</td>
</tr>
<tr>
<td>Value (adapted from Eccles, et al., 1984; Wigfield et al., 1991)</td>
<td>5</td>
<td>0.90</td>
<td>0.90</td>
<td>&quot;How much do you like learning something new about the prevention of pregnancy and HIV?&quot;</td>
</tr>
<tr>
<td>Knowledge (True/False) Teacher Credibility (Frymier &amp; Thompson, 1992)</td>
<td>10</td>
<td>0.81</td>
<td>0.75</td>
<td>&quot;The only teens who really need to worry are homosexuals and injecting drug users.&quot;</td>
</tr>
<tr>
<td>Teacher Affinity (Frymier &amp; Thompson, 1992)</td>
<td>6</td>
<td>--</td>
<td>0.88</td>
<td>&quot;Semantic differential; e.g., trained…untrained)</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>--</td>
<td>0.91</td>
<td>&quot;My instructor really understood how I felt about things.&quot;</td>
</tr>
</tbody>
</table>
Table 2.

**Correlations and Descriptive Statistics for Student-Level and Classroom-Level Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td>1.53</td>
<td>0.50</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Attitudes about sex (T1)</td>
<td>2.73</td>
<td>1.09</td>
<td>-0.28***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Expectancy (T1)</td>
<td>5.39</td>
<td>1.40</td>
<td>0.19***</td>
<td>-0.01</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Value at Time 1</td>
<td>5.42</td>
<td>1.41</td>
<td>0.27***</td>
<td>-0.02</td>
<td>0.63***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Value at Time 2</td>
<td>5.61</td>
<td>1.34</td>
<td>0.24***</td>
<td>-0.02</td>
<td>0.38***</td>
<td>0.58***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sensation Seeking (T1)</td>
<td>3.44</td>
<td>0.88</td>
<td>-0.11**</td>
<td>0.36***</td>
<td>-0.03</td>
<td>-0.07</td>
<td>-0.02</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Prior sexual experience (T1)</td>
<td>0.41</td>
<td>0.49</td>
<td>-0.08</td>
<td>0.46***</td>
<td>0.08</td>
<td>0.08*</td>
<td>0.14**</td>
<td>0.17***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Knowledge at Time 1</td>
<td>3.18</td>
<td>2.20</td>
<td>0.08</td>
<td>0.17***</td>
<td>0.18***</td>
<td>0.17***</td>
<td>0.06</td>
<td>0.12</td>
<td>0.22***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Knowledge at Time 2</td>
<td>4.31</td>
<td>2.90</td>
<td>0.05</td>
<td>-0.13**</td>
<td>0.14***</td>
<td>0.06</td>
<td>0.07</td>
<td>0.06</td>
<td>-0.15***</td>
<td>0.25***</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Peer sexual behavior (T1)</td>
<td>2.80</td>
<td>1.08</td>
<td>0.15***</td>
<td>-0.55***</td>
<td>-0.12**</td>
<td>-0.08</td>
<td>-0.12**</td>
<td>-0.22***</td>
<td>-0.46***</td>
<td>-0.18***</td>
<td>0.09*</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>11. Ethnicity</td>
<td>0.39</td>
<td>0.49</td>
<td>0.06</td>
<td>0.02</td>
<td>0.15***</td>
<td>0.19***</td>
<td>0.13**</td>
<td>-0.22***</td>
<td>0.15***</td>
<td>-0.02</td>
<td>-0.18***</td>
<td>-0.10*</td>
<td>--</td>
</tr>
</tbody>
</table>

**Note.** Gender coded as males = 1, females = 2. Prior sexual experience coded as virgin = 0, non-virgin = 1. Ethnicity coded as other = 0, black = 1.  
*< .05; **< .01; ***< .001
Table 3.

*Residual Intraclass Correlations for Dependent Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\gamma_{oo}$</th>
<th>$\sigma^2$</th>
<th>Residual ICC</th>
<th>$\chi^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value at Time 2</td>
<td>0.078</td>
<td>1.121</td>
<td>0.065</td>
<td>54.608</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Knowledge at Time 2</td>
<td>0.655</td>
<td>6.014</td>
<td>0.098</td>
<td>75.174</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>
Table 4.  
*Contextual Models (Group-Mean Centered) with Teacher Affinity and Teacher Credibility Predicting Value and Knowledge at Time 2*

<table>
<thead>
<tr>
<th>Fixed Effects</th>
<th>Value at Time 2</th>
<th>Knowledge at Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\gamma$</td>
<td>$B$</td>
</tr>
<tr>
<td>$\beta_0$ Model for classroom mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{00}$</td>
<td>3.224</td>
</tr>
<tr>
<td>Teacher affinity</td>
<td>$\gamma_{01}$</td>
<td>0.811</td>
</tr>
<tr>
<td>Teacher credibility</td>
<td>$\gamma_{02}$</td>
<td>-0.148</td>
</tr>
<tr>
<td>$\beta_1$ Model for gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{10}$</td>
<td>0.200</td>
</tr>
<tr>
<td>$\beta_2$ Model for attitudes about sex (T1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{20}$</td>
<td>-0.184</td>
</tr>
<tr>
<td>$\beta_3$ Model for expectancy (T1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{30}$</td>
<td>-0.010</td>
</tr>
<tr>
<td>$\beta_4$ Model for value at Time 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{40}$</td>
<td>0.512</td>
</tr>
<tr>
<td>$\beta_5$ Model for Sensation seeking (T1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{50}$</td>
<td>0.044</td>
</tr>
<tr>
<td>$\beta_6$ Model for prior sexual experience (T1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{60}$</td>
<td>0.257</td>
</tr>
<tr>
<td>$\beta_7$ Model for knowledge at Time 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{70}$</td>
<td>-0.031</td>
</tr>
<tr>
<td>$\beta_8$ Model for peer sexual behavior (T1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{80}$</td>
<td>-0.141</td>
</tr>
<tr>
<td>$\beta_9$ Model for ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{90}$</td>
<td>0.043</td>
</tr>
</tbody>
</table>

*Note.* Level-1 $N = 633$. Level 2 $N = 28$. 
