BARRIERS TO AND FACILITATORS OF PHYSICAL EDUCATION TEACHER CHANGE

BY

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DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Kinesiology
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2017

Urbana, Illinois

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Abstract

Physical education programs have been regarded as ineffective at addressing rising obesity rates due to inadequate curriculum and instruction. Experts have called for physical education teachers to change their traditional practices and adopt strategies that promote lifetime participation in physical activity. Little, however, is known about the process of teacher change in physical education, including the internal and external factors that promote or inhibit change. The purpose of this study was to investigate change among current physical education teachers and identify barriers to and facilitators of the change process.

Data were collected using a quantitative survey followed by in-depth interviews with selected surveyed participants. The survey was distributed to 5,287 physical education teachers, nationally, of which 2,423 responded (46% response rate). The survey consisted of 15 items related to teacher dispositions toward change that assessed program satisfaction (PS), self-efficacy to change (SEtC), and willingness to change (WtC); five items that assessed likelihood to change (LtC); and six items that assessed initiation of past change. In addition, six demographic questions were included. Complete survey data ($N = 2,233$) were analyzed using factor analysis and structural equation modeling (SEM) to determine the validity and reliability of a Teacher Change Questionnaire-Physical Education (TCQ-PE), which included teacher disposition items (PS, SEtC, and WtC) relative to LtC. Further analysis of the survey included descriptive analysis, cross-tabulation, Chi-square test for independence, and repeated measures analysis of variance (ANOVA). Based on preliminary results of the TCQ-PE, participants were categorized as change-disposed (CD), not change-disposed (NCD), or neutral (neither CD or NCD). In-depth interviews were conducted with a randomly selected subsample of CD teachers

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(n = 18) and NCD teachers (n = 14) to qualitatively explore internal and external factors that promote or inhibit change.

Factor analytics and SEM showed the TCQ-PE to be a valid and reliable instrument that accurately predicts teachers' likelihood to make future pedagogical change (LtC). Survey results indicated that teachers made changes to specific aspects of their programs, including curriculum, instruction, class management, assessments, and learning environment. Most change (83%) is self-initiated and little change (17%) is related to external factors such as administrators, professional development, or state mandates. Results of cross-tabulation and Chi-square analysis showed proportionate differences between CD, NCD, and Neutral teachers. A greater proportion of CD teachers were female ($\chi^2[2, N = 2233] = 19.64$, $p = .000$), had fewer years of teaching experience ($F[2, 2232] = 39.83$, $p < .001$), and more often taught at least one other subject in addition to physical education ($\chi^2[2, N = 2233] = 12.89$, $p = .002$) than NCD and Neutral teachers. Results of ANOVA revealed that CD teachers made significantly ($p < .01$, $\eta^2 = .046$ to .119) more changes than Neutral and NCD teachers in curriculum ($F[2, 2232] = 52.2$, $p = .001$), instruction ($F[2, 2232] = 76.8$, $p = .001$), management ($F[2, 2232] = 89.4$, $p = .001$), assessment ($F[2, 2232] = 116.7$, $p = .001$), and learning environment ($F[2, 2232] = 147.8$, $p = .001$).

Qualitative analysis revealed that CD and NCD teachers are strongly influenced by students, teaching colleagues, and administration, and their individual change-dispositions affect their perception of barriers to and facilitators of change. Internal factors such as teacher dispositions toward change predict teachers' likelihood to make future change, and reflect patterns of past change. Individual change-disposition is also influential in how teachers perceive external initiators of change, and is indicative of what teachers prioritize in their programs.

Dedication

To my most favorite people in the whole world. Joni, Ainsley, and Madelynn Kern; you are my

life, and none of this would be meaningful to me if I could not share it with you. I love you.

Sunshine and Rainbows

The world was always changing

Everything was sunshine and rainbows

But then everything was black licorice and traffic

I grew older wondering why

I haven't figured out how the world works yet

One day I would hear someone say a forbidden word

that I thought for sure no one would ever say

The next I would hear a crime scene

ready to be told on the news

I always thought about

what was so wrong in this world

and how I wish someone would make it right

Maybe mom could bandage it up

or kiss it to make it feel better

and everything would be fine

So ignoring the black licorice and traffic,

I still cling to sunshine and rainbows

Hoping the planet changes into a world full of hope and peace

-Ainsley Kern

appropriately. I absolutely could not have done this project without either of you, and I cannot give enough praise about the work you do and the value of the Survey Research Laboratory.

I offer a sincere thank you to four people, *Linda West*, *Tammy Winterbottom*, *Julie Jenkins*, and *Tina Candler* who made my time at UIUC smoother and who help keep the Kinesiology and Community Health Department up and running. Thank you Linda for all your help with my grant payments, purchases, and especially all your help with mailing out 5,000 paper surveys. As I write this now, I know you have already retired from UIUC, but I want you to know that I recognize the enormous contribution you have made to the university and I thank you. Thank you Tammy for constantly saving me when it seems I was running short of time; especially when you single handedly printed all of my survey mailers. Thank you Julie for always taking the time to explain how to navigate through the intricate details of the graduate program at UIUC. There is much to know, and students' stress levels immediately go down after a conversation with you; many thanks. Thank you Tina for always being the warmest and friendliest face in Freer Hall. I will always remember you saying, "All these smart people…(grinning)" which of course was tongue in cheek and made me remember that it is important to use common sense, not just deep academic thought.

Thank you *Dr. Doug Ellison* and *Chad Killian* for your friendship and support. Some of my most fond memories of graduate school are with both of you. I enjoyed the many conversations we had and continue to have about research, politics, religion, and whatever else is important or stimulating. I will always have fond memories of our regular research discussion sessions that occurred in establishments serving craft brews; sessions that we lovingly called, *Brewsearch*. Thank you for being my support system then, now, and in the future. I also thank the rest of the graduate student crew that I had the pleasure of spending time with; Gabriella

McLoughlin, Tom Trendowski, Jeff Steinberg, and Junghwan Oh. You all made my time at UIUC special.

Finally, I offer my most sincere thank you to my wife *Joni Kern* and daughters, *Ainsley* and *Madelynn*. Ladies, you are the most important part of my life. I am so grateful for you. We began this journey together by leaving the only home any of us had ever known, and started a new life in a place where we knew no one. I know how frightening this must have been for you and I am so amazed at how you took it all in stride and supported me. Thank you for being there for me when things were hard and when they got harder. I love you with all that I am.

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Chapter One: Introduction

"Educational change depends on what teachers do and think – It's as simple and as complex as that. It would all be so easy if we could legislate changes in thinking." (Fullan, 2007, p. 129)

About one-third of children and adolescents living in the United States (US) are either overweight or obese (Ogden, Carroll, Kit, & Flegal, 2014). If obesity rates continue to rise at the current rate, by the year 2030 nearly two-thirds of children and adolescents will be overweight or obese, and related health care costs will be approximately 17% of total health care costs (Wang, Beydoun, Liang, Caballero, & Kumanyika, 2008). The consequences of this trend have been an increase in obesity related disorders in young people, and have caused some researchers to speculate that today's generation of children may be the first in modern history to have a shorter lifespan than their parents (Olshansky et al., 2005).

In order to offset the alarming childhood obesity trends, public health organizations such as the Centers for Disease Control (CDC) recommend that children participate in at least 60 minutes of moderate to vigorous physical activity (MVPA) each day. Since children spend a great deal of time in school, it is recommended that schools play a central role in promoting physical activity, particularly through physical education programs that target physical activity as a primary outcome (American Heart Association [AHA], 2012; Centers for Disease Control [CDC], 2011). According to the CDC, physical education programs should be the "cornerstone" of a comprehensive physical activity approach (CDC, 2011), with physical education teachers serving as school physical activity leaders (Society of Health and Physical Educators [SHAPE] America, n.d.). It also is recommended that physical education class be offered on a daily basis for all K-12 students, with elementary students receiving a minimum of 150 minutes per week and secondary students, 225 minutes per week (SHAPE, 2010).

Although physical education class would appear to be a logical venue for addressing the obesity epidemic and providing children with adequate opportunities to engage in MVPA, physical education teachers are often criticized for ineffective curriculum and teaching methods (Bulger & Housner, 2009; Williams, 1996) and have been encouraged to make changes to the way they teach (McKenzie & Lounsbery, 2014). For example, in some physical education classes students wait in long lines to use equipment, play large sided games where only a few students are active while others are disengaged, and play elimination games like dodgeball and duck, duck, goose (Lee, Burgeson, Fulton, & Spain, 2007; Williams, 1996). Such practices result in physical education classes with low levels of MVPA and little educational value, thus leading advocates and researchers in the physical education pedagogy field to call for reform (McKenzie & Lounsbery, 2014; Silverman, 1991).

In order to encourage educational reform all but one US state has adopted standards for physical education, and most (76%) states have policies requiring local district compliance with state adopted standards (National Association for Sport and Physical Education [NASPE] & AHA, 2012). The move toward standards-based education represents a major paradigm shift for many physical education teachers (Mercier & Doolittle, 2013), with some teachers embracing standards, but many objecting to them because they do not align with their vision of physical education (Lund & Tannehill, 2014).

Leading public health organizations have called upon physical education teachers to shift the emphasis of their programs away from the traditional "games and sports" approach to student learning of knowledge and skills that will enable lifelong physical activity and ensure that at least 50% of class time is spent engaging students in MVPA (CDC, 2011). Recently, researchers have demonstrated that targeted changes to physical education curriculum and instructional

strategies can improve student learning and increase MVPA simultaneously (Jago et al., 2009; McKenzie et al., 1996). For example, Jago et al. (2009) demonstrated that physical education teachers could engage students in greater than 50% of class time in MVPA while simultaneously meeting state curricular requirements of student learning by selecting vigorous activities like aerobic dance, fitness stations, and jumping rope in place of less active games such as softball. Participants (physical education teachers) in this study also utilized more effective management and communication strategies, such as minimizing student wait times during lesson transitions, taking attendance while students are physically active, and positive reinforcement of students who willingly engage in physical activity. This and other studies like it demonstrate that physical education programming can produce an environment whereby students learn knowledge and skills for lifetime activity and participate in high amounts of MVPA during class. Unfortunately, this type of programming is not the norm (Bulger & Housner, 2009) in US public schools, and clearly change is both needed and possible.

Teacher Change

Teacher change is a topic of research that has implications for teacher quality. The quality of instruction provided by the teacher is widely regarded as one of the most impactful factors that are related to student achievement (Cuban, 1990; Darling-Hammond, 2000; Rockoff, 2004). Leading researchers in both physical education and public health agree that providing high quality physical education instruction is necessary for health benefits to be realized (Institute of Medicine [IOM], 2013) and appropriate student learning and skill development to occur (CDC, 2013; Tinning, 2006). There exists, however, a gap in the literature related to teacher change and how it relates to an improvement in effectiveness. Therefore, to promote

physical education teachers' adoption of best practices, more needs to be known about teacher change.

Teacher change in the education literature refers to pedagogical changes made by teachers in varying contexts. Fullan (2007) describes pedagogical change as variations and alterations in instructional resources, teaching approaches, or beliefs about pedagogical theory that lead to changes in practice by teachers. Instructional resources may include curricular materials, equipment and supplies, or technologies to enhance student learning. Teaching approaches refers to teaching strategies and activities that promote student learning, and beliefs include teachers' pedagogical assumptions and theories underlying practices (Fullan, 2007). Ultimately, the teachers' adoption of new resources, approaches, or beliefs is at the heart of the matter when studying teacher change.

Spanning the past six decades, the study of teacher change has primarily been in reference to classroom teachers. More recently, and much less extensively, this general research topic has included physical education teachers (Bechtel & O'Sullivan, 2007; Cothran, 2001). Broadly speaking, in both physical education and general education, researchers have examined the characteristics of teachers (Chen & Ennis, 1995; Rovegno & Bandhauer, 1997b; Walkwitz & Lee, 1992; Werner & Rink, 1989), the school environment and organizational structure (Faucette & Graham, 1986; Pope & O'Sullivan, 1998; Rovegno & Bandhauer, 1997a; Sparkes, 1988), and the effects of professional development as it pertains to teachers making pedagogical changes (Ward & Doutis, 1999; Ward, Doutis, & Evans, 1999). Characteristics of teachers include their knowledge of content (Chen & Ennis, 1995; Walkwitz & Lee, 1992; Werner & Rink, 1989), beliefs about teaching (Bechtel & O'Sullivan, 2007; Ennis, 1994; Kulinna, Silverman & Keating, 2000), and dispositions about innovations and the change process (Cothran, 2001; McCaughtry,

Martin, Kulinna, & Cothran, 2006a; Rovegno & Bandhauer, 1997b). Studies examining the impact of school environment and organizational structure have addressed school culture (Pope & O'Sullivan, 1998; Rovegno & Bandhaur, 1997a), teacher socialization (Curtner-Smith, 1999; Curtner-Smith, Hastie, & Kinchin, 2008), collegiality (Bechtel & O'Sullivan, 2007; Gentry, 2014; Sparkes, 1988; Stroot, Collier, O'Sullivan, & England, 1994), role of the principal (Bechtel & O'Sullivan, 2007; Faucette, 1987; Faucette & Graham, 1986; Lounsbery, McKenzie, Trost, & Smith, 2011), and influence of students and community members (Bechtel & O'Sullivan; Cothran, 2001; McCaughtry et al., 2006a; Smyth, 1995; Templin, 1981). Research on professional development is the most current and primarily involves examining the effectiveness of professional development initiatives on teachers' practice (Armour & Yelling, 2004; McCaughtry, Martin, Kulinna, & Cothran, 2006b; Patton & Griffin, 2008; Ward & Doutis, 1999; Ward et al., 1999). In aggregate, research on teacher change has focused on individual teachers, the school environment, and effects of professional development.

Perspectives of Teacher Change Research

Historically, research on teacher change has been conducted because researchers have sought to understand how to support teachers in adapting to reform efforts by the federal government and other stakeholders. Thus, the typical perspective of teacher change has been in reference to external sources suggesting, encouraging, or mandating that teachers make changes (Richardson, 2003). Some scholars argue that this scenario of externally initiated, "top-down" change contributes to teachers' resistance to change, and is less likely to be sustainable even if teachers actually embrace proposed changes (Guskey, 2002; Fullan, 2007; Richardson, 1998). For example, in a study of top-down mandated curricular change, physical education teachers were reluctant or unable to implement a new physical education curriculum due, in part, to a

mismatch of their individual understanding of physical education and the emphasized components of the district mandated curriculum (Cothran, McCaughtry, Kulinna, & Martin, 2006).

Little research has considered the change process when the individual teacher self-initiates pedagogical changes. Although the top-down perspective is valuable to understanding key factors about teacher change during reform efforts, it does not address the changes teachers make of their own volition, nor does it consider the conditions under which change is most often made (Richardson, 1990). Some researchers claim that [classroom] teachers regularly and frequently make instructional changes on their own based on students' needs and their sense of what is working (Richardson, 1990; Richardson, 1998). For example, a in a recent study, classroom teachers independently initiated pedagogical changes approximately 75% of the time during a school year (Maskit, 2013). In the field of physical education, Cothran (2001) describes case studies of six physical education teachers who voluntarily made large-scale curricular changes successfully, and showed continued commitment to the changes.

While schools are more collaborative now than in the past, teachers still work in relative isolation and are primarily in charge of making nearly all instructional decisions (Hargreaves & Fullan, 2012). Additionally, teachers do not regularly engage in ongoing professional development beyond one- or two-day workshops (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009), therefore their subjective theories and daily experiences on the job as teachers primarily influence their decisions to make pedagogical changes. This point is magnified for physical education teachers who are often more isolated than other teachers and receive less professional development as compared to classroom teachers (Lee et al., 2007).

Teacher Socialization

To better understand teacher change in pedagogical practices, the theory of teacher socialization will guide this investigation. Teacher socialization is part of a larger theoretical framework referred to as Occupational Socialization Theory (OST). The OST has been applied to the socialization of physical education teachers, explaining how social factors influence teachers beliefs about physical education prior to and during teacher education, and while working as professionals (Lawson, 1983a, 1983b). The focus of this study in regard to teacher socialization is concerned with the time when teachers are employed in schools, which is broadly referred to as organizational socialization.

Organizational socialization

Organizational socialization is described as "the process by which one is taught and learns the ropes of a particular organizational role" (Van Maanen & Schein, 1979, p. 211). In the teaching profession, teachers form a culture within the school context that shapes their actions, behaviors, and orientations toward teaching (Feiman-Nemser & Floden, 1984). In addition to the culture that is established by teachers, other socializing agents are present in schools. These socializing agents include students, administrators, parents, community members, and other school personnel. Each of these socializing agents has the potential to influence how teachers' perform their jobs, including the decisions they make about what and how to teach (Van Maanen & Schein, 1979).

Teachers and those who make up the collective school context (i.e. teachers, administrators, parents, community members, other school personnel) tend to assume either an innovative or custodial orientation. A teacher who assumes an innovative orientation can be described as someone who is "open to change and solicits new, up-to-date approaches to

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teaching PE," whereas a teacher who assumes a custodial orientation is described as someone who is "concerned primarily with maintenance of the status quo and the use of traditional teaching methodologies (Richards, Templin & Graber, 2014, p. 114). When the orientation of an individual teacher and other stakeholders in the school context are similar, it is unlikely that there will be any conflict or tension between teachers or other stakeholders. If, however, the orientation of the individual teacher and other members of the school context differ, teachers may feel conflicted and choose to comply with or resist contextual demands (Richards et al., 2014). Depending on the relative match of orientations, individual teachers may feel supported or discouraged by other stakeholders when attempting to make pedagogical changes (Smyth, 1995; Day & Gu, 2010).

Rationale and Purpose

Understanding the process of teacher change is fundamental to the delivery of high quality physical education, which can contribute significantly to student MVPA and learning knowledge and skills for lifetime physical activity (Jago et al., 2009; McKenzie et al., 1996). Research suggests that many US physical educators provide inadequate instruction and low amounts of physical activity (Bulger & Housner, 2009) therefore change is needed. Little is known, however, about the reasons why teachers make pedagogical changes and what supports or inhibits these changes. Understanding the change process will inform policy aimed at improving K-12 physical education programs and physical education teacher education (PETE) programs. Grounded in teacher socialization theory, the purpose of this study is to identify the internal and external factors that facilitate or inhibit physical education teachers' in making pedagogical changes.

Research Questions

1. What are physical education teachers' perceptions of the barriers to and facilitators of pedagogical change?

   - How do socializing agents such as students, colleagues, and administrators enhance or inhibit the change process?

2. What are physical education teachers' dispositions toward the change process?

   - How do dispositions about the change process relate to the pedagogical changes physical education teachers initiate and attempt to implement?

3. What is the relationship between physical education teachers' beliefs about teaching and learning and their desire to make change?

   - How are physical education teachers' dispositions about the change process related to their beliefs about teaching and learning?

4. What are physical education teachers' perceptions of the change process when pedagogical changes are self- and externally- initiated?

   - How do physical education teachers perceive the role of socializing agents during self- and externally- initiated pedagogical change?

   - How do physical education teachers perceive the sustainability of pedagogical changes that are self- and externally- initiated?

5. To what extent do physical education teachers attempt self- and externally- initiated pedagogical changes?

   - What types of pedagogical changes do physical education teachers make that are self- and externally- initiated? (e.g. curriculum, instruction, management, assessment, learning environment)

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Chapter Two: Review of Literature

"*When society has an itch, the schools scratch.*" (Cuban, 1992, p. 216)

In the past 30 years, the number of children who are obese has doubled, the number of obese adolescents has quadrupled (National Center for Health Statistics, 2012), and currently, just over one-third of youth ages 6 to 19 years old are classified as overweight or obese (Ogden et al., 2014). Healthy lifestyles that include high amounts of physical activity are critical to offsetting rising obesity rates (U.S. Department of Health and Human Services, 2010), and schools are well positioned to provide both opportunity and education about the importance of physical activity. Physical education is considered to be the cornerstone of lifetime physical activity promotion (Tappe, & Burgeson, 2004), yet many physical education programs do not include adequate physical activity and active lifestyle education (Lee et al., 2007). Physical education teachers are called upon to change the way they teach in order to promote increased physical activity during and outside of the school day (Bulger, & Housner, 2009; IOM, 2013), however, little is known about physical education teacher change, including factors that influence change and the barriers and facilitators related to change.

Educational change is a difficult proposition (Fullan, 2007), and the factors that promote or inhibit teacher change have been studied in order to support and inform education reform efforts. In physical education, calls for reform have been in response to a general perception that current physical education programs are of insufficient quality and should be improved in order to promote students' knowledge and participation in lifelong physical activity (AHA, 2012; Lee et al., 2007). Considerable research on teaching in physical education has been conducted using Occupational Socialization Theory (OST) as a guiding framework to understand the lived experiences of teachers (Richards et al., 2014), and it is considered to be an important aspect of

teacher socialization (Lawson, 1983a, 1983b). Teacher socialization helps to explain and predict teacher behavior in the workplace and can be applied in the examination of physical education teacher change. This chapter will review findings in the literature related to physical education teacher change through the lens of teacher socialization.

Teacher Socialization

"Educational change is technically simple and socially complex." (Fullan, 2007, p. 84)

Broadly defined, teacher socialization is a process whereby individuals become participating members of the society of teachers (Danziger, 1971). Lawson (1983b) applied the concept of socialization to describe how physical education teachers come to believe what they do about the purpose of physical education and how it should be taught. Although individuals encounter socializing agents throughout the socialization process (e.g., other teachers, students, parents, administrators), individuals also play an active role in their own socialization, determining which beliefs they will acquire and which they will ignore. This is referred to as a dialectical process. (Schempp & Graber, 1992).

Dialectical is defined as "a process involving the confrontation of contending propositions that ultimately resolve into a synthesis of perspectives and actions of a new and unique design" (Schempp & Graber, 1992, p. 330). Teacher change can be understood by examining the dialectical nature of the interaction between socializing agents and teachers. Lawson and Stroot (1993) describe the dialectical nature of teacher socialization as one where teachers socially construct their own realities and their reality is also socially constituted, or reshaped by societal structures, simultaneously. Through the process of social construction, teachers develop subjective theories about reality, including beliefs about teaching and learning. Grotjahn (1991) defined subjective theories as "complex cognitive structures that are highly

individual, relatively stable, and relatively enduring, and that fulfill the task of explaining and predicting such human phenomena as action, reaction, thinking, emotion and perception" (p. 188). It is through these subjective theories that teachers filter out information from socializing agents that is not consistent with their own worldview, and allow consistent information to pass through (Richards, et al., 2014), thereby influencing decisions, such as whether to initiate and attempt pedagogical changes.

While the dialectical process is foundational to understanding teacher socialization, so too is the concept of innovative and custodial orientations. Orientations are applied to both individuals and organizational contexts, which are comprised of individuals working together in social settings (Van Maanen & Schein, 1979). Richards et al. (2014) describes innovative orientations as those possessed by an individual or context that is "open to change and solicits new, up-to-date approaches to teaching PE," whereas a custodial orientation refers to "an individual or context that is concerned primarily with maintenance of the status quo and the use of traditional teaching methodologies" (p. 114). The relative match of an individual teacher's orientation with the collective orientation of the school context can be an important factor in predicting whether teachers will make pedagogical changes, or the extent to which changes will be made (Curtner-Smith et al., 2008).

Stages of Socialization

The dialectical nature of teacher socialization provides an appropriate focusing lens for the study of teacher change because teachers are constantly subjected to the influences of socializing agents. Teachers choose their own sense of agency to resist or accept the influence of socializing agents. These decisions occur during various stages of teachers' lives (Richards, et

al., 2014). The three primary states include (a) acculturation, (b) professional socialization, and (c) organizational socialization.

Acculturation. Often referred to as pretraining (Zeichner & Gore, 1990) or anticipatory socialization (Dewar, 1989), *acculturation* is considered to be the period of time from birth until an individual enters a formal teacher education program (Lawson, 1983b). During this time, it is estimated that individuals spend approximately 13,000 hours interacting with teachers, coaches, parents, counselors, and others who will influence their beliefs about teaching (Lortie, 1975). As a result, individuals develop a strong teaching role identity (Bullough & Pinnegar, 2001) that remains relatively stable throughout their teaching career (Templin, Woodford, & Mulling, 1982).

Lortie (1975) used the term, *apprenticeship of observation* to describe the informal learning that takes place from watching and imitating the behaviors of teachers and other socializing agents during the acculturation period. Through this prolonged interaction, teacher recruits develop strong impressions about the teaching profession and occupational role they will later assume (Lawson, 1983b). Views developed during this time provide a basis for beliefs and teaching practices that are enduring. According to Schempp (1989), "the apprenticeship of observation represents collected and recollected experiences from days as a student and those experiences provide a continuing influence over the pedagogical practices and orientations of PE teachers" (p. 35).

During the apprenticeship of observation, future teachers begin to develop their own subjective theories about education that are heavily influenced by the type of teaching and teachers they are exposed to as students. For example, students exposed to traditional physical education programs may come to believe that physical education is primarily designed to be fun,

should cater to athletic students, and that instruction is not necessarily connected to success (Graber, 2001). Students in traditional programs may develop a subjective theory of physical education that is aligned with traditional practices, and they may filter out more contemporary messages like those that emphasize high levels of engagement for all students. In a study of high school students intending to be physical educators, students reported believing that physical education teachers are responsible for making class fun, and that instruction was not necessary because everyone could succeed if they exerted enough effort (Hutchinson, 1993).

In addition to the apprenticeship of observation, Lortie (1975) described social mechanisms called "facilitators" that help steer individuals toward a given occupation (p. 26). One particular type of facilitator, the *subjective warrant*, is an individual's perception of the requirements of an occupation and the self-evaluation of one's ability to meet those requirements (Lortie, 1975). During acculturation, teacher recruits in traditional physical education programs may develop ideas that physical education teachers do not have the same teaching responsibilities as classroom teachers, and that the primary role of the profession is coaching (Curtner-Smith & Sofo, 2004; Dodds et al., 1992). Not surprisingly, research indicates that pre-service physical education teachers point to their former physical education teachers and coaches as influential in their desire to pursue careers as physical education teachers (Curtner-Smith et al., 2008; Dewar, 1989; Templin et al., 1982).

Professional Socialization. Following the acculturation stage, future teachers enter the professional socialization stage as students enrolled in a teacher education program at a college or university (Lawson, 1983b). The formal training of teachers is conducted by teacher education faculty, and includes field-based experiences such as observations and the student teaching

internship (Lawson, 1983b). Formal teacher education is designed to provide teachers with theory, knowledge, and skills associated with generally accepted best practices.

Research suggests that while teacher education programs are effective in teaching knowledge and skills, the subjective theories of pre-service teachers often do not change as a result of professional socialization (Zeichner & Gore, 1990). Evidence of this limited impact is demonstrated in a longitudinal study in which the effects of a teacher education program on the knowledge, skills, and beliefs of three physical education teachers were examined (Matanin & Collier, 2003). The results showed that the teacher education program was successful in conveying content area knowledge and effective teaching skills, but was unsuccessful in changing the teachers' beliefs about the purpose of physical education. Additionally, the participants consistently reported that they would likely assign grades to their future students based on effort and participation, in spite of being taught in teacher education that grades should reflect student learning. The results of this study confirm results of previous studies on the limited impact of professional socialization (Richards, et al., 2014).

Organizational Socialization. The organizational socialization stage begins when individuals enter schools as employed teachers and continues throughout the teaching career. Organizational socialization has been described as "a jejune phrase used by social scientists to refer to the process by which one is taught and learns the ropes of a particular organizational role" (Van Maanen & Schein, 1979, p. 211). Organization socialization exerts a strong influence on teachers through a host of socializing agents, including students, fellow teachers, parents, and administrators.

Each of the different socializing agents who teachers encounter may exert different influences due to the amount of time spent together and the relative power balance between the

teacher and different socializing agents (Schempp & Graber, 1992; Van Maanen & Schein, 1979). For example, students are strong socializing agents because teachers spend the majority of their workday engaged with students. Although they spend less time with administrators, their position of power can create a strong socializing influence (Schempp & Graber, 1992).

Teachers respond to organizational socialization with either a custodial or innovative orientation (Van Maanen & Schein, 1979). A custodial orientation is evidenced when the individual adopts a caretaker stance toward their organizational role, thus accepting the status quo (Van Maanen & Schein, 1979). These teachers accept the policies and practices that are customary in the school and do not call into question the validity or rationale of such policies. As a result, "The current system becomes stronger and the continuation of current knowledge, practices, and outcomes is assured" (Stroot & Ko, 2006, p. 427). Studies conducted in physical education most commonly report that teachers assume a custodial orientation in new positions (Smyth, 1995; Stroot & Ko, 2006; Williams & Williamson, 1998).

Teachers may also respond to socialization by rejecting the status quo and adopting an innovative orientation (Van Maanen & Schein, 1979). Van Maanen and Schein (1979) further categorize this orientation into *content innovation* and *role innovation*. Content innovation is a response by an individual in which the process or practices of the organization are called into question and the individual seeks to change the norms of practice. Individuals who respond with content innovation do not question the overall mission of the organization, but they do object to the means by which the mission is completed (Stroot & Ko, 2006). For example, a teacher may agree with the goals of a school reading program, but have different ideas about the best teaching methods to meet the goals. Those who respond with role innovation disagree with mission of the organization and seek to redefine it and their own role within the organization (Van Maanen &

Schein, 1979). Teachers exercising role innovation, for example, may seek to change the program goals because they have different beliefs about their own role and the nature of student learning (Stroot & Ko, 2006).

Any mismatch in orientations is likely to result in some conflict, and teachers must decide how to react when mismatches occur. According to Lacey (1977), teachers may employ one of three strategies when faced with an orientation that contrasts with their own. The first, *strategic compliance*, is an attempt by the teacher to outwardly comply with the orientations of members of the school context in an attempt to reduce conflict and ease integration. Teachers often utilize this strategy when they feel powerless to confront members of the school context, however, they often retain private reservations and covertly respond in accordance with their own beliefs (Skelton, 1990). Lacey (1977) describes teachers using this strategy as "merely seen to be good" (p. 72).

A second strategy, *internalized adjustment*, occurs when teachers elect to accept the beliefs of others in the organizational context and comply with policies and procedures in spite of possessing contrasting opinions. Teachers who internally adjust may adopt this stance because they believe it is in the best interest of everyone to simply comply (Scarth, 1987). Internalized adjustment is a common response from teachers because it represents a "path of least resistance" (Williams & Williamson, 1998, p. 82) and may result in less outward conflict for teachers (Skelton, 1990). Researchers have noted that internalized adjustment most often occurs when teachers' subjective theories are closely matched with the members of the school context as opposed to being vastly different (Graber, 1998; Williams & Williamson, 1998). Thus, the degree of adjustment is less severe.

A third strategy described by Lacey (1977), *strategic redefinition,* is when teachers attempt to change the status quo of the school context. Scarth (1987) points out that strategic redefinition, as defined by Lacey, implies that teachers are capable of changing the opinions of members in the school organization, yet lack the formal power to do so. Strategic redefinition represents teachers' efforts to outwardly oppose the beliefs and norms existing in the school context, regardless of their relative success in affecting change. Examples of strategic redefinition are rare (Richards et al., 2014), though a few exist in the physical education literature (Curtner-Smith et al., 2008; Schempp, Sparkes, & Templin, 1993; Williams & Williamson, 1998). Related to strategic redefinition is a concept proposed by Sikes, Measor, and Woods (1985), which describes a hybrid strategy whereby teachers comply with some aspects of the school culture, while also attempting to redefine others. This method allows teachers to strategically choose "developmental sites" that may be more easily changed (Skelton, 1990, p. 389) and reduces the amount of resistance teachers may encounter.

The study of teacher socialization provides an effective lens from which to view teacher change because the lived experiences of teachers influence the decisions they make about teaching (Lawson, 1983a, 1983b). Theorists and researchers have developed theoretical constructs that describe how teachers' subjective theories develop and are enacted over time (Van Maanen & Schein, 1979). When applied to teacher change, the orientations that teachers assume will impact to a great extent whether or not they will adopt or resist change.

Research on Teacher Change

Teacher change is a broad topic of research in which only a limited number of studies have been conducted, particularly in the area of physical education. Research in both general education and physical education has tended to focus on factors that are internal, or central to the

individual teacher, and external, or part of the teachers' workplace environment. Research

studies conducted on teacher change have focused primarily on the (a) characteristics of

individual teachers who facilitate or impede change, (b) school environment/organizational

structures that promote or discourage teacher change, and (c) professional development of

teachers.

Characteristics of Teachers

The characteristics of individual teachers have been the focus of research in order to

better understand what facilitates or impedes significant changes to teaching practices. These

characteristics are internal factors and include teachers' beliefs about teaching and their

dispositions about the change process. Teachers' beliefs about teaching have garnered attention

because of a general agreement among researchers that teachers' pedagogical practices are

reflective of their beliefs about teaching and student learning (Fang, 1996; Pajares, 1992). This

relationship between beliefs and practice extends to the study of teacher change because experts

also agree that long-term change in teaching practices requires changes to teachers' beliefs

(Fullan, 2007; Guskey, 2002). As a result, factors affecting beliefs have the potential to influence

whether or not teachers make changes to their practices.

Beliefs about teaching and learning. Teachers' beliefs about teaching and student

learning include their subjective theories about curriculum (i.e. what to teach) and instruction

(i.e. how to teach) (Fang, 1996; Pajares, 1992). Their beliefs are considered to be the driving

force of the curricular and instructional decision-making process (Fang, 1996, Fullan, 2007,

Guskey, 2002; Pajares, 1992; Tsangaridou, 2006). According to research, what teachers believe

students should learn is most often the focus of the content that is taught, and teachers' beliefs

about their own role and the role of students in the learning process predicts how teachers

approach instruction (Czerniak, & Lumpe, 1996; Kirk, MacDonald, & O'Sullivan, 2006; Pajares, 1992; Tobin, 1987). Research also indicates that teachers formulate beliefs about teaching prior to implementing corresponding teaching practices (Bullough & Pinnegar, 2001; Lawson, 1983a; Lortie, 1975; Richardson, Anders, Tidwell, & Lloyd, 1991; Zeichner & Gore, 1990).

The notion that teachers' beliefs precede and predict their teaching practice has implications for teachers' decisions about making changes to their practices (Bailey, 1992; Golombek, 1998; Richards, Gallo, & Renandya, 2001). For example, in a study of language teachers' beliefs about teaching and the change process, Richards et al. (2001) indicates that changes in their instructional practices corresponded with changes in their beliefs about teaching and the role of learners in the education process. Studies in physical education show similar results. Bechtel and O'Sullivan (2007) reported that physical education teachers' beliefs were influential to making changes in instructional practices and enhanced the change process. Additionally, Cothran (2001) indicated that physical education teachers' beliefs about the importance of physical education to students' health prompted changes to curriculum.

While evidence suggests that changes in teachers' beliefs are critical to bringing about changes in practice (Bailey, 1992; Bechtel & O'Sullivan 2007; Cothran, 2001; Fullan, 2007; Golombek, 1998; Guskey, 2002; Richards et al., 2001), there is also evidence that teachers' beliefs may inhibit change if teachers believe strongly in their current ideals and feel that change is not necessary or potentially beneficial. Research conducted by Ennis (1994) demonstrated that physical education teachers beliefs, measured as value orientations, greatly influence their goals and objectives for students and that these value orientations are highly resistant to change. The results suggest that teachers' beliefs may become a potential obstacle to innovative processes such as professional development and may also act as a constraint to acquiring new knowledge.

Similar results are found in general education. For example, in a study examining math, science, and social studies teachers' beliefs about teaching reading in their content area, Hall (2005) reported that teachers' beliefs about teaching were an obstacle to making changes to include content area reading as part of regular instruction.

The literature shows that teachers implement practices that are consistent with their beliefs about what and how students should learn (Borg, 2011; Fang, 1996; Pajares, 1992). These beliefs can act as facilitators or inhibitors of change to teaching practice depending on whether the proposed changes are in alignment with teacher beliefs and how strongly teachers' beliefs are situated (Ennis, 1994; Hall, 2005; Richards et al., 2001). Teacher socialization research indicates that teachers' beliefs are developed prior to entering formal training, and that professional training is often ineffective in altering beliefs (Richards et al., 2014). Therefore, a critical aspect of teacher change is related to the alteration of beliefs, though research suggests this may be a most difficult task (Davis, 2003; Guskey, 2002; Pajares, 1992).

Dispositions about the change process. Dispositions have received recent attention in the general education literature due to a strong relationship to teaching practices (Diez, 2007). Dispositions are described as teachers' tendencies to think and behave in particular ways (Katz & Raths, 1985; Wasicsko, 2007) and are representative of teachers' knowledge, attitudes, and beliefs (Murrell, Diez, Feiman-Nemser, & Schussler, 2010). Like beliefs, dispositions are predictive of teaching practice (Vannatta & Fordham, 2004), but dispositions are more of an embodiment of beliefs (Katz & Raths, 1985; Villegas, 2007). For example, a physical education teacher may believe that health-related fitness is the most important component of her program, and this belief may lead to a disposition of dissatisfaction with only being able to teach physical education to students one day per week.

Related to the process of change, dispositions include how teachers perceive the necessity of change and their own ability to successfully implement that change (Vannatta & Fordham, 2004). Grounded in the literature base in both general education and physical education, the three dispositions that have the potential to affect teacher change include (a) dissatisfaction with current programming/practice, (b) willingness or openness to change, and (c) self-efficacy.

A disposition that may lead to change in teaching practices is teachers' sense of dissatisfaction with their current teaching/learning conditions (Maskit, 2013). Shaw, Davis, and McCarty (1991) referred to this dissatisfaction as *perturbation*, which they likened to a period of mental dissonance (p. 162). Perturbations are part of a reflective process whereby teachers recognize the need for change, envision how changes would be enacted, and assess their own individual commitment to making change (Shaw, et al., 1991). According to Shaw et al. (1991), change begins with perturbation, and the decision to act upon a perturbation is related to how strongly teachers feel that change is needed, along with their visions about how successfully they would be able to implement changes. The relative strength of the perturbation combined with the teachers' ability to envision successful implementation ultimately determines their commitment to making change (Shaw, et al., 1991).

Research indicates that teachers differ in the degree to which they experience perturbations, thus making them more or less predisposed to change. For example, Steinhoff (2007) classified four distinct types of teachers based on their receptiveness to change: (a) the good soldiers, (b) the inquisitives, (c) the insta-skeptics, and (d) the badly burned. The good soldiers were described as teachers who readily accept change nearly without question. The inquisitives thoughtfully question change prior to eventual acceptance. The insta-skeptics rarely accept change of any kind and often revel in their conservatism. The badly burned are also not

accepting of change due to negative past experiences or career burnout. Steinhoff (2007) emphasized that the disposition toward change is an individual characteristic, and those more prone to change experience greater dissonance with the status quo (Steinhoff, 2007).

In the general education literature, perturbation or dissatisfaction with current programming has been found to be a powerful precursor to teachers making changes to their instructional practices. For example, Gess-Newsome, Southerland, Johnston, and Woodbury (2003) report that teachers' dissatisfaction with their pedagogical practices was more influential to making teaching changes than grant support that allowed for the mitigation of contextual barriers to change. Teacher dissatisfaction as a cause for change is seen in physical education literature as well, albeit with a limited number of studies that have been conducted. In one example, Cothran (2001) examined the dispositions of six physical education teachers who reported adopting new curriculum models. The participants in this investigation initiated large-scale curricular changes primarily due to dissatisfaction with the effectiveness of their current programs. In another study of physical education teacher change, Pope and O'Sullivan (1998) describe how one physical education teacher came to realize that his current teaching strategies were not adequate to support teaching a new curriculum model. The teacher indicated his dissatisfaction with current methods and a desire to learn about and make changes that would support greater student learning.

Another common disposition toward the change process is an individual's willingness or openness to change. Willingness to change has been studied in reference to how innovative ideas and processes are communicated throughout social systems (Rogers, 1962). Rogers (2003) defined innovations as ideas, objects, or practices that are perceived to be new by individuals. According to Diffusion of Innovations (DOI) theory, individual members of a social system are

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categorized based on their responsiveness to innovations and at what point in time they adopt innovative practices (Rogers, 2003).

Researchers in the field of psychology have used the term *innovativeness* to describe the degree to which individuals are willing to accept changes and implement innovations, or perceived new strategies or behaviors (Hurt, Joseph, & Cook, 1977; Goldsmith, 1986). Innovativeness has been measured on multiple scales (Hurt et al., 1977; Jackson, 1976; Kirton, 1976; Leavitt & Walton, 1983) and can successfully predict behavior change, including changes to teaching practice (Cassata, Kim, & Century, 2015; Ilhan, Cetin, & Arslan, 2014; Tondeur, Valcke, & Van Braak, 2008; Van Braak, 2001; Vanatta & Fordham, 2004). For example, Vannatta and Fordham (2004) found that individual innovativeness was predictive of changes made by teachers to include classroom technology as part of their instruction. Cassata et al. (2015) found that individual innovativeness was significantly, positively related to mathematics teachers making instructional changes such as facilitating more cognitively demanding work, utilizing assessment to inform instruction, and differentiation for maximizing student success. Additionally, Van Braak (2001) reports individual teacher innovativeness predicted changes to include the use of computers in general education classrooms.

In physical education, innovativeness, as a construct, has not been directly measured, however, the disposition of teacher willingness to change is reported as impactful in multiple studies. In one such study, Rovegno and Bandhauer (1997b) studied how the psychological dispositions of physical education teachers related to their perceptions of the change process. Willingness to change and acceptance of the difficult nature of change were among several dispositions that were considered essential to successful pedagogical change (Rovegno & Bandhauer, 1997b). In addition, participants in a study by Bechtel and O'Sullivan (2007)

indicated their decisions to adopt a new physical education curriculum were due to a desire to "be in touch with new ideas and be current in teaching" (p. 227). Furthermore, Williams and Williamson (1998) described the experiences of more innovatively oriented beginning teachers who were more willing to change than their veteran teaching colleagues. This willingness to change resulted in some teachers who challenged their more custodial colleagues and administrators about how physical education should be taught (Williams & Williamson, 1998).

Although it has yet to be specifically examined in physical education, the concept of innovativeness is obviously a strong factor influencing teachers' decisions to make pedagogical changes. Studies in general education suggest that teacher innovativeness is a predictor of teachers' willingness to move from traditional practices to more up-to-date curriculum and teaching strategies, such as technology integration (Vannatta & Fordham, 2004). Given the multiple measures available to assess innovativeness and the potential predictive ability of the construct, it is logical to include measures of innovativeness in research on physical education teacher change.

Another highly influential disposition related to the change process is individual teacher self-efficacy. Bandura (1995) describes the concept of self-efficacy to be a "belief in one's capability to organize and execute the courses of action required to manage prospective situations" (p. 2). Research on teacher self-efficacy has shown positive associations with a multitude of educational outcomes, including measures of student achievement (Goddard, Hoy, & Hoy, 2000; Tschannen-Moran, Hoy, & Hoy, 1998) and teacher behaviors such as planning and organization (Allinder, 1994). The self-efficacy of teachers is also related to their enthusiasm for teaching (Guskey, 1984; Hall, Burley, Velleme, & Brockmeier, 1992), positive teacher-student

interactions (Ashton & Webb, 1986; Gibson & Dembo, 1984; Soodak & Podell, 1993), and greater commitment to teaching (Evans & Tribble, 1986).

Teachers with higher self-efficacy have also been shown to be more open and willing to change their teaching practices when guided by professional development initiatives (Evers, Brouwers, & Tomic, 2002; Guskey, 1984; Stein & Wang, 1988). Smylie (1988) reported that individual teacher change is a direct function of personal teaching efficacy. Additionally, Evers et al. (2002) found that teachers with higher teaching self-efficacy also had higher efficacy toward making pedagogical changes and more frequently implemented new teaching practices.

Although teacher self-efficacy is well documented in general education, few studies have included this construct in the study of physical education teachers, and even fewer studies have examined it in relation to physical education teacher change. One study conducted by Martin, McCaughtry, Hodges-Kulinna, and Cothran (2008) considered how teaching self-efficacy affects pedagogical change by measuring the self-efficacy of a group of teachers involved in a professional development program versus a control group. The results showed that a curriculum specific (Exemplary Physical Education Curriculum [EPEC]) professional development initiative improved teachers' general educational self-efficacy and their self-efficacy toward using the EPEC curriculum, however, the researchers did not directly measure teachers' self-efficacy or confidence toward making pedagogical change itself. To date, no studies in the physical education literature have addressed teacher self-efficacy toward pedagogical change.

Based on the literature on teachers' dispositions about the change process, it is evident that perceived need to change is based on an individual teacher's sense of satisfaction or dissatisfaction with their current program (Cothran, 2001; Gess-Newsome et al., 2003; Pope & O'Sullivan, 1998; Shaw et al., 1991; Steinhoff, 2007) and their perceived ability to successfully

initiate and implement changes (Evers et al., 2002; McCaughtry et al., 2006a; Rovegno & Bandhauer, 1997b; Vannatta & Fordham, 2004). Teachers' willingness to change their pedagogical practices is an understudied yet important factor related to whether or not teachers attempt change (Hargreaves, 1994). Furthermore, teachers' self-efficacy may be a critical factor in determining whether physical educators initiate and attempt pedagogical changes.

School Environment and Organizational Structure

School environment and organizational structures are external factors that influence how teachers think about teaching, and to some degree, dictate their ability to make desired change (Richards et al., 2014; Schein, 2010). Research in general education and physical education indicates that several school environment and organizational structures influence the change process, including teacher socialization in the workplace; school culture; collegiality among teachers; role of the building principal; and students, parents and community members.

Teacher socialization in the workplace. Teachers' decisions to initiate pedagogical changes are affected by teacher socialization in the workplace, also referred to as organizational socialization (Van Maanen & Schein, 1979). Teachers constitute and large part of the school context, and the unique culture of the school influences both their teaching behaviors and orientations toward teaching (i.e. innovative or custodial) (Feiman-Nemser & Floden, 1984). The collective school context is a powerful socializing agency in which rules are largely unwritten and members hold deeply embedded assumptions (Lawson, 1989). The relative match of a teacher's orientations with other members of the school context influences how that individual performs the job of teaching, including whether or not changes to teaching practices are attempted (Richards, et al., 2014; Staton & Hunt, 1992).

Studies of the experiences of beginning teachers entering a new school context demonstrate how workplace socialization influences decisions about what and how to teach, and therefore may also inform the change process. Zeichner and Tabachnick (1983) studied teachers during their first year of teaching and found that most teachers felt compelled to conform to the expectations of veteran teachers regarding instructional practices, including classroom management strategies and curricular emphasis. The authors termed the pressure to conform as the *institutional press*. Teachers with innovative orientations who face a strong institutional press that favors traditional teaching practices may experience difficulty attempting to initiate and implement pedagogical change (Stran & Curtner-Smith, 2009). For example, Curtner-Smith (1999) investigated how teacher workplace socialization affected physical education teachers' efforts to change and implement a new national curriculum in the United Kingdom. In over half the cases, the more innovatively oriented beginning teachers felt compelled to teach the new curriculum in a similar manner to their traditionally oriented department colleagues, despite having reservations about doing so.

Although other teaching colleagues may impede a teacher's ability to change, it can facilitate pedagogical change under certain conditions. Curtner-Smith et al. (2008) studied two distinctly different settings where American and British physical education teachers implemented a Sport Education curriculum (Siedentop, 1994). The authors report that the relative match of orientations among teachers heavily influenced how the curriculum was delivered. For example, the participants taught the curriculum as a "full version, watered down version, or cafeteria style" (p. 97). The Americans had veteran colleagues who discouraged the use of the new curriculum while the British teachers interacted with innovative colleagues who mentored them through the process. Not surprisingly, the American teachers implemented a watered down or cafeteria style

version of the curriculum while the British teachers implemented the full version. The results of this study support previous findings about orientation mismatches that impede change, but also provide evidence that when orientations match, pedagogical change is enhanced.

Research demonstrates that teacher socialization in the workplace exerts a powerful influence over teachers (Richards et al., 2014; Staton & Hunt, 1992) and can act as both a facilitator and/or barrier to teachers' initiating and attempting pedagogical change (Curtner-Smith et al., 2008). The dialectic nature of the exchange between teachers and their colleagues is the means by which teachers express their curricular and instructional orientations (Schempp & Graber, 1992) and determines, to a great extent, the resulting behavior of teachers.

School culture. Due to the strong influence that school cultural norms have on teacher behavior, understanding school culture is fundamental to promoting change in education (Hargreaves, 1994; Sarason, 1971; Sarason, 1996). The school cultural norms that have received particular attention in educational research are related to the isolated nature of teaching and the lack of collaboration in schools (Sarason, 1996). Isolation and lack of collaboration reduce the likelihood that teachers will share a common vision or mission, which is a critical feature in successful educational change (Fullan, 2007; Hargreaves & Fullan, 2012). Further they cause teachers to often resist change and "weather the storm" until reform efforts pass (Hargreaves & Fullan, 2012).

Rovegno and Bandhauer (1997a) examined the experiences of an elementary physical education teacher who adopted a new curriculum. They reported that five norms of school culture had a positive impact on the teacher's change process: (a) school philosophy, (b) teacher learning, (c) teacher participatory power and responsibility, (d) continual school improvement, and (e) empowerment, or the tendency "to feel that we can do anything" (p. 407). The norms of

school culture described in this study represent a departure from isolation and lack of collaboration. In a similar study, Pope and O'Sullivan (1998) examined the experiences of a high school physical education teacher who adopted the Sport Education model (Siedentop, 1994). It was reported that the supportive and collaborative professional culture of the school was responsible for the success of the teacher's implementation. The authors argue that teacher pedagogical changes take place because of links to a positive cultural context and rarely occur without this connection.

In the general education literature, professional learning communities (PLC) have been shown to positively facilitate teacher change (Strahan, 2003; Vescio, Ross, & Adams, 2008). Professional learning communities are "groups of educators that meet regularly and work collaboratively to improve teaching skills and the academic performance of students" (Hidden curriculum, 2014, p. 1). In one study examining the effectiveness of a PLC, Strahan (2003) studied of the dynamics of school culture in three elementary schools over a 3-year span. Each school's student achievement scores rose dramatically during the time frame of the study. It was found that teachers engaging in collaborative, data-directed dialogue about common assessments were critical to the improvements in student achievement. By creating a collaborative culture focused on assessments, teachers in this study were successful in implementing changes to their teaching practices that resulted in positive student outcomes.

School culture where teachers work in relative isolation can be detrimental to reform (Hargreaves & Fullan, 2012; Lortie, 1975) because isolation does not facilitate collaboration, collegiality, or a shared mission (Hargreaves, 1994). This is especially problematic when education reform efforts are introduced, because proposed changes do not have the necessary collaborative mechanisms in place to promote their successful adoption (Lieberman, 1988).

When school cultures include collaboration and a departure from isolation, teacher change is supported.

Collegiality among teachers. Collegiality, considered by many to be the opposite of isolation (Dorsch, 1998), is indicative of collaboration. Collegiality among teachers is considered to be an essential characteristic of schools that meet stated goals and objectives and have successful track records related to educational change (Hargreaves, 1995; Sweetland & Hoy, 2000). Studies conducted in both general education and physical education demonstrate the positive impact collegiality can have on teachers' pedagogical practices and efforts to make changes (Little, 1982; Shidler, 2009; Showers, 1985; Sparkes, 1988; Stroot et al., 1994).

Little (1982) described the importance of collegiality among teachers in a study of overall school effectiveness as measured by student achievement. Teachers from six schools with varying track records of success in student achievement participated in this longitudinal study. In the more successful schools, teachers demonstrated collegiality by pursuing professional interactions with each other and with administrators, observing and talking about instruction, and sharing common planning time. Teachers in less successful schools had significantly fewer collegial interactions and lower overall school student achievement scores.

Deliberate strategies such as peer coaching have been developed to foster collegiality in schools (Showers, 1985). Shidler (2009) studied the effects of this strategy and reported that time spent developing collegiality through peer coaching was significantly correlated with teacher self-efficacy and improvements in student achievement. It was concluded that collegiality developed through peer coaching allows teachers to reflect upon and make necessary changes to their teaching practices, and the supportive environment promotes the implementation of new practices.

The influence of collegiality among physical educators is evident in the literature as well. According to research, varying levels of collegiality exist within physical education departments, and greater collegiality is associated with perceptions of higher quality programming, program enhancement, and workplace politics (Kirk, et al., 2006). Stroot et al. (1994) examined collegial support among 11 physical education specialists who worked with at least one other department colleague. It was found that the degree of collegial support was dependent on teachers having similar philosophies about physical education. Greater collegial support was also associated with program enhancements in this and other studies. For example, Gentry (2014) examined the collegial inter-workings of teachers in physical education departments who had received recognition for excellence for their programs. The author reported that teachers and administrators in highly functioning departments communicate effectively, work in a team-oriented atmosphere, and distribute leadership duties.

Collegiality has also been associated with workplace politics. For example, Sparkes (1988) investigated the experiences of teachers in a physical education department who were required by the administration to change their curricular emphasis. Though none of the teachers agreed with the change in approach, they did perceive the change as an opportunity to improve the image of the department to outsiders. The teachers utilized political strategy in portraying their programs as having changed, but in actuality, no changes were made. The collegiality demonstrated in this study did not result in program enhancement, however, the study outcome illustrates the effectiveness of collegial interaction by those who were united in a common cause.

Role of the principal. Collegiality that includes principal support can facilitate the functioning of physical education departments (Gentry, 2014). Principal support is also a critical component for teachers' who are attempting to make pedagogical changes (McLaughlin &

Marsh, 1978; Watkins, 2005). Principal supervision and facilitation predicts teachers'

engagement and successful participation in change initiatives (Leithwood, 2013). In physical

education, principal support is equally critical to teacher change, though principals may not

support physical education teachers to the same degree as classroom teachers (McKenzie &

Lounsbery, 2009; Sparkes, Templin, & Schempp, 1993).

When principal support is present, it is a powerful facilitator of change, and when it is

absent, teachers may struggle to sustain changes they have made. For example, Faucette and

Graham (1986) examined the effects of principal support on two physical education teachers'

practices who were implementing a new curriculum as part of an in-service program. Initially,

the principals supported the teachers' use of curriculum but withdrew as time passed. The early

support for the teachers facilitated their adoption of the new curriculum, but lack of later support

made the changes difficult to sustain. The principals in this study both facilitated and hindered

the change process based on the level of support they provided.

Physical education teachers' may experience increased self-efficacy when principal

support is present. Faucette (1987) examined the experiences of physical education teachers who

attempted to implement a new movement-based physical education curriculum. In cases where

the teachers were successful in implementing and sustaining the change, they credited principal

support as a key factor in their success. In other cases, participants received little principal

support, and subsequently enacted no significant changes, in spite of agreeing conceptually with

the new curriculum. For two participants, it was noted that the principals "contributed to their

self-efficacy" (p. 439).

In a recent study of pairs of principals and physical education teachers, Lounsbery, et al.

(2011) examined the facilitators and barriers to adopting an evidence-based physical education

(EBPE) program. Evidence-based physical education programs are defined as "those that have a substantial research base for improving health-related behavior" (p. S18). Principal-physical education teacher pairs were compared based on whether or not they had adopted an EBPE. In the adopter schools, teachers reported greater principal involvement in teacher and program evaluation, suggesting that principal involvement in the physical education program promotes adoption of EBPE programming. Notable, however, in this study, was the fact that most principals were already satisfied with the physical education program, regardless of whether it was evidence-based or not, and principals generally demonstrated a lack of knowledge of physical education programming altogether.

  Students, parents, and community members. Students likely have the greatest impact on teacher behavior (McLaughlin & Talbert, 1993). Fullan (2007) states that, "Unless they (students) have some meaningful role in the enterprise, educational change, indeed most education, will fail" (p. 170). Research over the past several decades has linked student behavior to changes in teacher behavior (Bas, 2011; Enochs, Scharmann, & Riggs, 1995; Hoy, 1967; Klein, 1971; McLaughlin & Talbert, 1993). Hoy (1967) first identified and conceptualized pupil control ideologies, which are teachers' beliefs and attitudes toward student discipline, that range from custodialism to humanism. Custodialism refers to the maintenance of control over student behavior, while humanism refers to the allowance of students to self-regulate (Hoy, 1967). Research shows that teachers commonly adjust their control ideologies through greater exposure to students, becoming more controlling and less humanistic over time (Kuhlman & Hoy, 1974; Templin, 1981). The tendency for teachers to become more controlling may imply that they favor strategies for controlling student behaviors over student learning (Templin, 1981).

Researchers have identified students as the measure by which teachers determine the success of their change efforts (Guskey, 2002; Richardson, 1994, 1998; Smyth, 1995). Guskey (2002) describes a model of professional development whereby teachers change their beliefs about the appropriateness of an educational change effort only after they experience positive student outcomes through implementing the change. Scholars suggest that the influence students have on teachers may be the most powerful due to the extended amount of time spent together, and the relative isolation teachers experience in their day-to-day work (Fullan, 2007; Lortie, 1975; Richardson, 1998). Teaching in isolation is even more pronounced among physical education teachers because their teaching spaces are often physically separated from their colleagues who teach in other areas (Macdonald, 1995; Stroot & Ko, 2006).

Research specific to physical education teacher change suggests that students are a key factor to successful change (Bechtel & O'Sullivan, 2007: Cothran, 2001; Smyth, 1995; Solmon, Worthy, & Carter, 1993). Following the completion of their first year of teaching, Smyth (1995) reported that students' response to curriculum and teaching strategies influenced first-year physical education teachers to change their curricular plans, goals, and teaching methods from the more innovative practices learned in teacher education to traditional activities students were accustomed to learning. It was noted that students were "barometers by which most teachers measured their success as instructors and curriculum designers" (p. 208). In another study, Solmon et al. (1993) report accounts of first-year teachers who struggled to convince students that physical education is a class and not a play period. The teachers in this study indicated that they did not lower their standards for student learning, but that the pressures to do so were regularly applied by students, and it would have been much easier for them to concede to such pressures.

In addition to students, parents and/or community members have also been shown to influence teachers who are attempting pedagogical changes. Williams and Williamson (1998) described how parent opposition to the focus of physical education instruction and grading procedures led to pressures on teachers to change their practices. Unsupportive parents viewed physical education class as a break from school that should not be graded like other classes, forcing the teachers to justify their practices. Parents in this study exerted influence by contacting the school principal to request that grading procedures be changed or by writing letters to physical education teachers demanding change.

Professional Development

Professional development (PD) in both general education and physical education is driven by reform efforts and is recognized as the cornerstone of teacher change (Association Internationale des Ecoles Superieures d'Education Physique [AIESEP], 2007). Although PD is considered essential to change, scholars suggest that research efforts should be geared toward ensuring the effectiveness of PD initiatives (Fullan, 2007; Guskey, 2002).

A criticism of PD is that it most often occurs in a *top down* manner, meaning that teachers are prompted, encouraged, or mandated to make changes by others such as administrators, researchers, or legislators (Richardson, 2003), without input into the decision. Researchers and critics of educational reform initiatives consistently note that *externally initiated*, top down change fails because initiators of change have not made the effort to garner teacher support for the proposed changes or do not consider the unique circumstances of individual teachers (Fullan, 2007; Richardson, 1998). Even in cases when teachers accept the ideals of externally initiated change initiatives, they may still be resistant to or incapable of

proposed changes because they do not believe the changes can successfully be implemented in their individual classrooms (Guskey, 2002).

Experts who are critical of top down change argue that authentic and sustainable change occurs when teachers self-initiate change, often referred to as *bottom up* (Richardson, 1990). According to Richardson (1998), teachers frequently initiate instructional changes and evaluate the effectiveness of these changes based on student response. Recent evidence of teacher change supports this notion, suggesting that approximately 75% of the time that teachers make changes to their curriculum and practice, it is through self-initiation (Maskit, 2013). Education experts recognize the value of both approaches and often advocate for a combination of externally initiated, top down and self-initiated, bottom up change strategies in promoting successful PD (Hargreaves, 1994; Fullan, 2007).

General education researchers have suggested that much of the current PD available to teachers is woefully inadequate (Borko, 2004), taking the form of short-term workshops that provide only superficial learning and little follow-up support (Darling-Hammond et al., 2009). While this also is true for physical education teachers, the inadequacy of PD is confounded by the fact that most in-service learning is not specific to physical education (Armour & Yelling, 2004; Sparkes et al., 1993), and overall there are considerably fewer PD opportunities for physical education teachers than their classroom counterparts (NASPE & AHA, 2012). Despite the challenges associated with PD, there are positive examples in the research literature that demonstrate the potential for teacher change when optimal conditions exist. Researchers have examined (a) the processes that promote successful PD, (b) the value of having adequate PD resources and (c) student outcomes associated with PD efforts.

Processes that promote successful PD. Successful PD efforts include processes that promote both changes to teachers' beliefs and the necessary knowledge and skills for implementing changes (Ward & Doutis, 1999). Ward et al. (1999) describe the outcomes of a successful university-school partnership in which the focus was helping physical education teachers meet the national standards (NASPE, 1995) in their curriculum. The authors report that a long-term, shared vision of student learning among teachers and administrators was the most critical factor in the success of the *Saber-Tooth Project*, and that this shared vision coincided with changes in teachers' beliefs. The success of the project was characterized by a "cessation of business as usual" (p. 460), where teachers relinquished traditional teaching practices in favor of planning, teaching, and assessing with student learning as the focus.

The results of the Saber-Tooth Project demonstrate that a shared vision and adequate support were critical to the success of the PD effort. Likewise, in a study of middle school physical educators participating in an initiative designed to reform teachers' instruction and assessment practices, teachers increased their planning time and organizational/managerial efficiency, and successfully worked to better align assessments with their instructional practices (Patton & Griffin, 2008). Like the Saber-Tooth project, this change initiative targeted teachers' beliefs about curriculum and instruction. Teachers in this study indicated a shift in their beliefs from authoritarian to a style that allowed for greater student autonomy (Patton & Griffin, 2008).

Successful PD initiatives have also been reported in the general education literature. For example, Corcoran, McVay, and Riordan (2003) reported the results of a PD initiative designed to promote high levels of student scientific literacy. Long-term PD efforts that included on-going support resulted in significant changes to instruction, particularly related to the use of inquiry-based teaching/learning strategies. These changes coincided with improvements in student

achievement. Likewise, Stephens et al. (2007) studied the longitudinal effects of a state wide, evidence-based PD program designed to enhance the teaching of reading in South Carolina schools. The PD, which included workshops and regular support from literacy coaches, resulted in considerable changes in teachers' beliefs and practices in the teaching of reading, as well as significant increases in student achievement on standardized tests.

Value of resources. While previous research has identified shared visioning and on-going support as critical to effective PD, another important feature of successful professional development is the provision of adequate resources to meet PD objectives (Darling-Hammond et al., 2009). Resources for PD are crucial because they ensure that teachers possess the necessary tools for successful implementation of changes (Guskey, 2002), and resources empower teachers to feel as though they can be successful in changing their teaching practices (Borko, 2004; McCaughtry et al., 2006b). For example, McCaughtry et al. (2006b) studied outcomes of a PD initiative that included curriculum and instruction resources for physical education teachers. The teachers indicated that the resources allowed them to improve their instruction by teaching a greater range of content, maximizing student-learning opportunities for diverse populations, and increasing safety. While other important factors in effective PD were evident in this study, the authors concluded that without the necessary resources, the PD initiative would, "at best be problematic, and at worst futile" (p. 232).

Student outcomes. The ultimate goal of PD is positive student outcomes. A number of studies in general education and a few studies in physical education, have shown positive student outcomes associated with PD (Corcoran et al., 2003; Lumpe, Czerniak, Haney, & Beltyukova, 2012; Stephens et al., 2007). In physical education, McKenzie et al. (1996) implemented the Child and Adolescent Trial for Cardiovascular Health (CATCH) for teachers in the form of

curriculum, training, and follow-up support to increase physical activity levels and improve overall school health. Results showed that students were significantly more physically active during physical education class, and markers of cardiovascular health improved as well. The CATCH trial was followed by a similar intervention with middle school teachers and similar results were demonstrated (McKenzie et al., 2004). The studies by McKenzie and colleagues provide a blueprint for successful physical education PD initiatives.

Kulinna (2012) designed a study to determine the long-term effects of a PD initiative on student physical activity and body mass index (BMI). Classroom and physical education teachers participated in a one-year PD project that provided training, instructional resources, and mentoring in a curriculum designed to increase student physical activity. Both intervention and control groups experienced significant increases in physical activity, although the students in the intervention group showed greater increases. Neither group changed significantly in BMI, suggesting that while PD may result in positive student behavior change, changes in BMI are more difficult to demonstrate. Nevertheless, the results of this study confirm previous findings that PD initiatives can successfully result in positive student outcomes.

Summary Model of Factors Influencing Teacher Change.

The research literature includes a wide range of factors that may influence the ability and propensity of teachers to attempt pedagogical change. Figure 2.1 is a conceptual model of how teacher characteristics, school environmental/organization structures, and professional development influence teacher change according to teacher socialization theory (see Figure 2.1).

Current State of Physical Education and the Need for Change

Physical education is considered by many to be an important means of addressing the obesity epidemic because it is offered is most schools (Pate et al., 2006) and is the only subject in

which physical activity is the focus (McKenzie & Lounsbery, 2009, 2014). Current physical education programs, however, fall short in addressing obesity because of ineffective instruction (Bulger & Housner, 2009). Kretchmar (2006) likened physical education teachers and their programs to being on "Easy Street" (p. 349), where critical knowledge is ignored and a superficial and minimalist way of teaching is the norm. Over two decades ago, Placek (1983) found that physical education teachers considered their programming successful if students were "busy, happy, good." Henninger and Coleman (2008) suggest that physical education teachers still define successful programming this way, despite overwhelming evidence related to best practices.

Efforts to improve instructional quality in physical education have included the adoption of national standards by the Society of Health and Physical Educators (SHAPE) America (NASPE, 1995, 2004). All but one US state has adopted physical education standards that reflect the SHAPE America standards, and teachers in most states are required to teach in accordance with them (NASPE & AHA, 2012). Research, however, suggests that teachers do not adhere to the guidelines for instruction described in standards documentation. In one study of nearly 1200 physical education teachers across all 50 states, Lee et al. (2007) reported that although the majority of US teachers had adopted state-, district-, or school-developed standards for physical education, less than 25% actually had a curriculum that was aligned with them. In addition, many teachers reported using inappropriate practices such as dodgeball and elimination games as part of the required curriculum. Furthermore, while skill performance and fitness tests were common assessments, most teachers assigned grades based on participation, attitude, appropriate clothing (i.e. dressing out for class), and attendance. Results suggest that the current state of US physical education programs is less than ideal.

McKenzie and colleagues have demonstrated that physical education programming that is focused on high amounts of physical activity can improve markers of health (McKenzie et al., 1996, 2004), while others have shown that physical education teachers can effectively teach standards-based content in a highly active environment (Jago et al., 2009). These studies, however, were conducted under ideal conditions in which ample resources and support were available to teachers. The typical conditions under which most physical education teachers operate are much different than those described in the successful PD literature (Bulgar & Housner, 2009; Lee et al., 2007). Therefore, understanding teacher change from a variety of perspectives and in relation to PD is critical to improving physical education in the US.

Statement of the Problem

Stakeholders in public health organizations, education reformers, and those in academe have urged change in physical education for decades. A host of factors contribute to successful pedagogical change, yet little is known about the change process of physical educators. The literature base lacks information about the barriers and facilitators to change, and little is understood about self- and externally-initiated change.

Knowing more about how and under what conditions physical education teachers are inclined to change would benefit researchers and reformers in designing intervention strategies to study and promote change initiatives. This knowledge has the potential to also foster program improvements in teacher education. The purpose of this study, therefore, is to investigate the nature of the internal and external factors that support or inhibit physical education teachers in making self- and externally-initiated pedagogical changes. The study is grounded in teacher socialization theory, and the following research questions will guide inquiry:

1. What are physical education teachers' perceptions of the barriers to and facilitators of pedagogical change?

   • How do socializing agents such as students, colleagues, and administrators enhance or inhibit the change process?

2. What are physical education teachers' dispositions toward the change process?

   • How do dispositions about the change process relate to the pedagogical changes physical education teachers initiate and attempt to implement?

3. What is the relationship between physical education teachers' beliefs about teaching and learning and their desire to make change?

   • How are physical education teachers' dispositions about the change process related to their beliefs about teaching and learning?

4. What are physical education teachers' perceptions of the change process when pedagogical changes are self- and externally- initiated?

   • How do physical education teachers perceive the role of socializing agents during self- and externally- initiated pedagogical change?

   • How do physical education teachers perceive the sustainability of pedagogical changes that are self- and externally- initiated?

5. To what extent do physical education teachers attempt self- and externally- initiated pedagogical changes?

   • What types of pedagogical changes do physical education teachers make that are self- and externally- initiated? (e.g. curriculum, instruction, management, assessment, learning environment)

Figure

Teacher Socialization
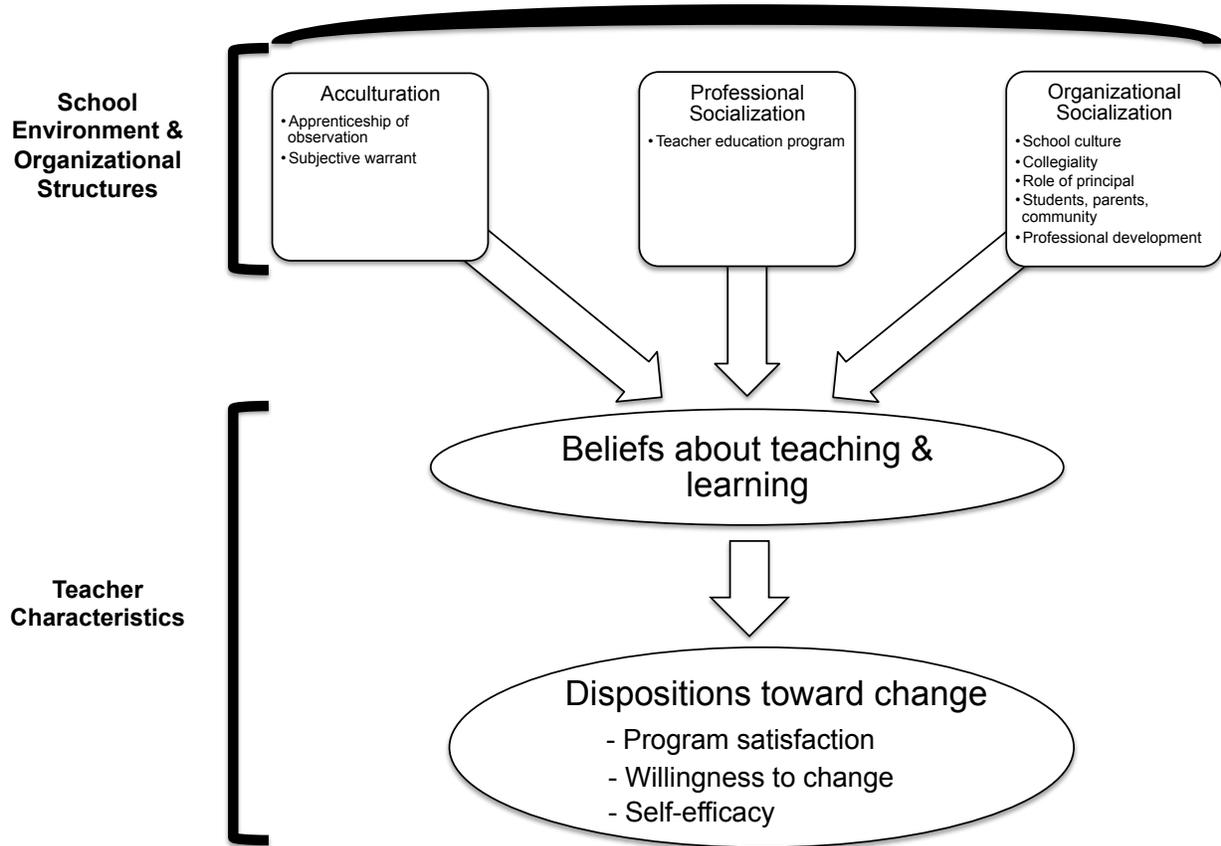
Figure 2.1. Conceptual model of the relationship of factors affecting teacher change according

to teacher socialization theory.

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Chapter Three: Method

Teacher change is an important yet understudied topic in physical education. Although a host of internal and external factors influence what physical education teachers believe and how they act, little is known about how these factors influence their decisions to make curricular or instructional (pedagogical) change. Furthermore, few studies have examined the barriers to and facilitators of pedagogical change. Since the majority of investigations address the change process only when changes are externally initiated, such as professional development initiatives, even less is known about the process of self-initiated change. Accordingly, the purpose of this study was to investigate the nature of internal and external factors that support or inhibit physical education teachers in making self- and externally- initiated curricular and pedagogical changes. This investigation utilized a mixed methods approach that was grounded in teacher socialization theory. The research questions that guided this study were:

1. What are physical education teachers' perceptions of the barriers to and facilitators of pedagogical change?

   a. How do socializing agents such as students, colleagues, and administrators enhance or inhibit the change process?

2. What are physical education teachers' dispositions toward the change process?

   a. How do dispositions about the change process relate to the pedagogical changes physical education teachers initiate and attempt to implement?

3. What is the relationship between physical education teachers' beliefs about teaching and learning and their desire to make change?

   a. How are physical education teachers' dispositions about the change process related to their beliefs about teaching and learning?

4. What are physical education teachers' perceptions of the change process when pedagogical changes are self- and externally- initiated?

    a. How do physical education teachers perceive the role of socializing agents during self- and externally- initiated pedagogical change?

    b. How do physical education teachers perceive the sustainability of pedagogical changes that are self- and externally- initiated?

5. To what extent do physical education teachers attempt self- and externally- initiated pedagogical changes?

    a. What types of pedagogical changes do physical education teachers make that are self- and externally- initiated? (e.g. curriculum, instruction, management, assessment, learning environment)

The goal of this investigation was to contribute to the body of knowledge about teacher change in order to promote higher quality physical education programming in US public schools. The findings from this study have the potential to inform future research on teacher change, including interventions targeting physical education reform. Additionally, information from the current study may benefit physical education teacher education (PETE) programs by providing data on current teachers and their working conditions, thus assisting the preparation of pre-service teachers.

Mixed Methods Research

A mixed methods research design was used to investigate the change process of physical education teachers. Specifically, the internal and external factors that influence teachers' decisions to initiate and attempt pedagogical changes, school environmental and organizational

structures that impede and support change, and teachers' perceptions of self-initiated (bottom up) and externally initiated (top down) change were studied.

Mixed methods research includes both qualitative and quantitative inquiry that is incorporated into a single study examining the same underlying phenomenon (Onwuegbuzie & Leech, 2006). According to Johnson and Onwuegbuzie (2004), the logic of mixed methods inquiry may include "the use of induction (or discovery of patterns), deduction (testing of theories and hypotheses), and abduction (uncovering and relying on the best of a set of explanations for understanding one's results)" (p. 17). The mixed methods approach to research design is built on the assumption that studying a phenomenon through multiple paradigms (qualitative and quantitative) enriches understanding and minimizes the weaknesses of a single method (Tashakkori & Teddlie, 2010).

Mixed methods study design has gained popularity among researchers in recent years, particularly in the field of education (Collins, Onwuegbuzie, & Jiao, 2007). An advantage of this design is that it allows researchers the ability to easily triangulate data from several sources about the same phenomenon, thereby increasing the validity of all measures (Tashakkori & Teddlie, 2010). In some cases, a mixed method design may also reduce the likelihood of pre-existing assumptions by researchers. For example, a technique used in mixed method research is to collect data using a tool such as a quantitative survey, and then conduct qualitative interviews and/or focus groups based on the categorized quantitative data. When quantitative and qualitative measures are used in sequence to better explain a phenomenon in this way, it is referred to as *sequential explanatory design* (Creswell, Plano Clark, Gutmann, & Hanson, 2003).

Sequential explanatory design is considered to be the most straightforward and simplest of mixed methods designs (Creswell et al., 2003). It is easily separated into distinct phases that

make procedures such as analysis and reporting of the results more clear and concise. Researchers who utilize a sequential explanatory design often prioritize either the quantitative or qualitative aspect of the study (Tashakkori & Teddlie, 2010). When the quantitative component is emphasized, the qualitative component is used to explain and interpret quantitative findings. In contrast, when the qualitative is emphasized, quantitative measures are often used to characterize participants by their individual traits that are of interest to researchers (Creswell, 2003), thus the quantitative results guide the selection of participants for a primarily qualitative study.

The current study utilized mixed methodology with a sequential explanatory design. The study employed primarily a qualitative design, with quantitative measures providing data for purposeful sampling of participants and triangulation of findings. A quantitative survey was developed and distributed to a national sample of physical education teachers. The results were analyzed and descriptive statistics were used to classify participants into one of two groups based on their responses regarding the pedagogical change process. Participants from each group were subsequently interviewed in order to gain a deeper understanding of their perspectives.

Methods and Procedures

This study incorporated a quantitative survey measuring physical education teachers' dispositions toward the pedagogical change process and their self-reported changes made within the 3 years prior to taking the survey. Based on the results of the survey, participants were selected for in-depth interviews focused on their perceptions about the barriers to and facilitators of attempting and implementing pedagogical change. Structural equation modeling (SEM) in conjunction with exploratory (EFA) and confirmatory factor analysis (CFA) was utilized in the analysis of the quantitative survey. Qualitative data was analyzed through constant comparison methodology (Glaser & Strauss, 1967; Patton, 2015). The study was conducted in separate

phases, beginning with participant recruitment and concluding with data analysis and reporting of the results in three peer-reviewed articles.

Phase I: Participant Recruitment

Following approval from the University of Illinois Institutional Review Board (see Appendix A), one state from each of the six Society of Health and Physical Educators (SHAPE) America districts was selected at random. A listing of all public schools in each of the chosen states was acquired from the National Center for Education Statistics (NCES) online database. From each state database, a stratified random sample of at least 200 schools was selected. In states with greater population densities, more than 200 schools were randomly selected in order to avoid bias. The stratification of the sample was based on four school grade level categories: (a) Elementary school (grades K-5), (b) middle school (grades 6-8), (c) high school (grades 9-12), and (d) multiple levels (any combination of elementary, middle, and high school). Contact information for one physical education teacher employed at each school was manually retrieved from the individual school websites, and the teachers were invited to participate in the study ($N =$ 5,287 participants). In the case of schools with multiple physical education teachers, one was randomly selected and contacted.

Selected participants were initially contacted via email (see Appendix B) and asked to participate in the study by consenting to (see Appendix C) and completing an online survey about their dispositions toward the change process and the pedagogical changes they have made to their programs (see Appendix D). Recruitment of participants continued until a 46% response rate was reached (2,423 consented participants out of a total 5,287 contacted). To achieve the response rate additional contact attempts beyond email were necessary, thus potential participants who did not respond to email were subsequently contacted via phone and/or US mail

until the desired response rate was reached. Participants who consented to participate and completed the survey were asked if they would be willing to participate in a 60 minute interview about the factors that influence their decisions to make pedagogical change and the barriers and facilitators they have encountered when attempting change. Consent to be interviewed and audio recorded was obtained prior to conducting interviews (see Appendix E).

From the group of participants who completed the survey and agreed to be interviewed, 32 were selected based on their quantitative survey results. Participants' responses to the survey were analyzed in order to characterize them by the degree to which they are disposed to pedagogical change. The sample group ($N = 32$) were comprised of teachers from opposite ends of a change continuum. Approximately half ($n = 14$) were categorized as not highly disposed to change, and the others ($n = 18$) were highly disposed to change.

The rationale for the number of participants initially selected from the national sample is two fold. First, CFA, a technique used to define underlying structures among variables, was used to confirm the convergent and discriminant validity of the factor structure of the survey (Hair, Black, Babin, & Anderson, 2010). Prior to conducting CFA, an exploratory factor analysis (EFA) was conducted as part of initial validation procedures, and ensured that the theorized underlying factor structure of the survey constructs loaded in a predictable manner. A common recommendation for minimum sample size in conducting CFA is 5 to 10 measurements per variable (Hair et al., 2010). It is also recommended that when EFA is used prior to CFA, that the EFA sample be discarded and not included in CFA, therefore doubling the needed sample size required (Hair et al., 2010). The survey used in this study had approximately 37 items (variables). Therefore, a minimum of 185 to 370 participants was needed to satisfy the required sample size for CFA, along with another equally large sample for EFA. Second, the survey was

designed to test potential causal relationships between variables using SEM. Although there is no consensus among researchers and statisticians about a minimum sample size for SEM, a common recommendation is 200 measurements, or 10 per variable (Hair et al., 2010; Quintana, & Maxwell, 1999). Thus, an additional 300-400 participants were required.

Phase II: Research Method Development and Researcher Training

A quantitative survey and semi-structured interview guide (Patton, 2002) was created and administered to participants (see Appendix F). The quantitative survey underwent procedures to ensure validity and reliability, and the qualitative interview guide was designed to facilitate credibility, dependability, and trustworthiness. Student research assistants were trained to assist with data collection procedures.

Survey Research Tool

A quantitative survey with closed-ended response items was created based on three teacher dispositions toward change, self-reported pedagogical change made within 3 years prior to taking the survey, and the primary initiator of past change. The three dispositions toward change include: (a) program satisfaction, (b) willingness to change, and (c) self-efficacy. Each of the three dispositions represent constructs identified in the literature that are associated with change in K-12 educators.

Program satisfaction. According to theory posited by Shaw, Davis, and McCarty (1991), teacher dissatisfaction is a prerequisite first step toward teacher change. Dissatisfaction will be assessed by measuring teachers' satisfaction with basic program elements including (a) curriculum, (b) instructional practices, (c) class management techniques, (d) assessments, and (e) learning environment. Survey items were generated using existing valid and reliable teacher

workplace satisfaction surveys (Fields, 2002) as a guide to item creation and were made to be contextually specific to physical educators.

Willingness to change. The willingness of individuals to accept and implement change has been studied by psychologists (Hurt, et al., 1977; Goldsmith, 1986) and is termed *innovativeness*. Multiple innovativeness scales have been developed with validity and reliability measures tested and reported in the extant literature (Hurt et al., 1977; Jackson, 1976; Kirton, 1976; Leavitt & Walton, 1983). Innovativeness as a personal teacher disposition has been linked to greater use of up-to-date instructional strategies such as technology integration (Cassata et al., 2015; Van Braak, 2001; Vanatta & Fordham, 2004). Items from existing innovativeness surveys that have been determined to be valid and reliable (Pallister & Foxall, 1998) were adapted for context and included in the creation of the survey.

Self-efficacy. Self-efficacy represents an individual's belief in his or her ability to execute required action (Bandura, 1995). Teaching self-efficacy is the confidence in one's ability to be effective in various aspects of teaching tasks, including pedagogical change. Bandura (2006) encourages the creation of self-efficacy scales that are "tailored to the particular domain of functioning that is the object of interest" (p. 308). Self-efficacy in this study was measured in reference to teachers' perceived confidence in their ability to attempt and successfully implement pedagogical change. Bandura's (2006) guide for constructing self-efficacy scales, along with existing teaching self-efficacy scales, informed the creation of survey items designed to measure physical education teachers' self-efficacy to change their pedagogical practices.

Pedagogical changes. For the purpose of this study, pedagogical changes are considered any alteration to basic program elements, curriculum, instructional practices, class management techniques, assessments, and learning environment. The survey was designed to measure the

extent and type of pedagogical changes teachers have made in the 3 years prior to survey completion. Additionally, the survey included items that determine whether pedagogical changes were self- or externally- initiated.

Face validity. The survey instrument was created based on existing valid and reliable surveys taken from the literature. The survey was drafted with guidance provided by faculty from the University of Illinois-Chicago Survey Research Laboratory and other experts in the fields of kinesiology. An initial working draft of the survey was forwarded to a panel of experts in both physical education pedagogy and survey research methods for feedback to determine face validity and appropriateness of the items. Based on expert feedback, needed changes were made and the survey was re-forwarded to the panel for final confirmation of face validity.

Pilot testing. A pilot test was conducted by sending the electronic survey link to approximately 40 physical education teachers in neighboring counties to the University of Illinois. Participants were asked to take the survey on two occasions, separated by no more than two weeks, and provide feedback about readability and their understanding of the survey items. Test-retest reliability was established during the pilot (r (40) = .92, $p < .01$), and minor wording changes were made to the survey items based on feedback from teachers.

Formal interviews

The study employed formal interviews as a primary data source. A semi-structured interview guide (Patton, 2015) with open-ended questions was administered once to selected participants. The semi-structured interview guide included predetermined questions that relate to the topics of interest to the researcher and follow-up questions that are based on participant's responses (Patton, 2015). Researchers utilizing semi-structured interviews ask participants the same general set of questions, but have the freedom to ask follow-up questions that may not have

been predetermined (Patton, 2015), thus preserving an inductive approach to data collection. Teacher socialization theory guided the creation of the interview questions and interviews lasted approximately 60 minutes. Interview questions were focused on (a) participants' perceptions of the barriers and facilitators they encounter when attempting to implement pedagogical change, particularly as they related to socializing agents, (b) beliefs about teaching and learning in physical education, and (c) experiences with self- and externally- initiated changes. Experts in physical education pedagogy were asked to review the interview questions, and changes were made based on their feedback.

Researcher Training

To aid in the efficiency of data collection, research assistants at the University of Illinois Urbana Champaign (UIUC) were employed by the principal investigator. Students with previous experience working in the Pedagogical Qualitative Research Laboratory in the Department of Kinesiology and Community Health were hired to assist with participant recruitment, data collection, transcription, and analysis. All assistants were trained in survey distribution/collection, interviewing techniques, and interview transcription. Research assistants were trained to use the online survey software to ensure that reliable data were gathered. They were also trained to administer the survey during phone conversations with participants.

<div align="center">

Phase III: Data Collection

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Data collection included surveys and formal interviews. Although all participants were asked to complete the survey, only some participants were invited to participate in interviews.

Survey Data Collection

The survey was distributed to physical education teachers representing the six districts in SHAPE America via email using an online survey program (Qualtrics®). The introductory email

message contained a statement identifying the researchers and their university affiliation, a voluntary participation statement, and a brief description of the purpose of the research. Individuals interested in participating followed the survey link to the informed consent page. Participants were required (forced response) to indicate that they read and consented to participate prior to beginning the survey. If consent was not given, participants were not allowed to complete the survey and were directed away from the survey website.

The survey was sent electronically on three separate occasions that were separated by 5 to 7 days. All participants were sent the survey initially; then only those who had not opened the survey were sent the survey for a second and/or third time. The Qualtrics® survey program can identify those recipients who open the survey but do not consent to participate. This response was considered to be non-consent, and those recipients were not contacted again. Following completion of all electronic distributions of the survey, an overall response rate was calculated. The response rate was less than 50%, thus mail and phone solicited surveys were conducted until the response rate approached 50%.

Those not responding to the electronic version of the survey were mailed a paper version of the survey and asked to consent to participate and complete the survey. Included in the mailer was a postage paid return envelope with instructions on how to complete and return the survey. The paper version of the survey was mailed to 5,036 recipients, and a total of 404 responses were received. During the mailing process, it was discovered that 1,425 contacts were not available at either their listed email address or physical mailing address, therefore they were dropped from any further solicitations and not considered a part of overall response rate calculations. Seventy-five participants were contacted via telephone and either administered the survey over the phone or directed to the electronic version of the survey. In the case of participants opting for a

telephone survey, the consent statement was read verbatim and verbal consent was received prior to administering the survey. A total of 23 participants were administered the survey directly via telephone, and 52 participants who were contacted by telephone subsequently completed the electronic version of the survey.

Preliminary Survey Data Analysis

Once an acceptable survey response rate (46%) was achieved, a preliminary analysis of the survey data was conducted to confirm the convergent and discriminant validity of the underlying factors and to select the participants who were interviewed. Exploratory factor analysis was conducted on three factors (program satisfaction, self-efficacy to change, and willingness to change,) with the first half of the responses to ensure that the survey constructs loaded as predicted. Then CFA in combination with SEM was conducted to determine convergent and discriminant validity of the instrument. Convergent validity was evaluated by examining the strength of factor loadings (i.e > .50), the average variance extracted (AVE), and the composite reliability (CR**)** values of each of the latent (unobserved) variables. Discriminant validity was evaluated by comparing the AVE values of latent variables with the square of the inter-construct correlations between each factor (Hair et al., 2010).

From the results of the survey, 32 participants were selected for qualitative interviews. Fourteen participants whose survey results indicated they are not likely to make pedagogical changes and report making few to no changes in the past 3 years were considered "Not Change Disposed" (NCD). Eighteen participants whose survey results indicated they are likely to make pedagogical changes and report making some or many changes in the past 3 years were considered "Change Disposed" (CD).

Formal Interview Data Collection

Interviews were conducted over a two-month period from March 2016 to May 2016. Participants were contacted via the email address they provided at the end of the survey and all interviews were conducted via telephone. Interviews were scheduled no less than one week in advance and a minimum of one reminder was sent prior to conducting the interview. Consent to be interviewed and audio recorded was received prior to the initiation of all interviews.

Data Analysis

Quantitative analysis of survey results was conducted through the use of SEM and CFA. Qualitative data analysis employed constant comparison methods as part of a grounded theory approach (Glaser & Strauss, 1967) and incorporated strategies to ensure the credibility, dependability, and trustworthiness of the data.

Quantitative analysis. Structural equation modeling in combination with CFA was used to analyze the relationship between teachers' dispositions toward change and their likelihood to make future pedagogical change. Structural equation modeling is a general statistical technique that includes CFA and multiple regression, and is used to explain complex relationships between latent (unobserved) variables with manifested (observed) variables (Hox & Bechger, 1998). The analysis utilized a two-step confirmatory approach to SEM (Anderson & Gerbing, 1988). The first step involved EFA of the three dispositions toward change latent variables (e.g. program satisfaction, willingness to change, and self-efficacy to change). In the second step, a separate CFA was conducted on the three latent variables in order to establish the convergent and discriminant validity of the survey instrument. In conjunction with CFA, a structural model was constructed based on the theoretical and observed relationship of dispositions toward change and teachers' likelihood to make future changes.

Figure 3.1 is a simple path diagram demonstrating the predicted relationships between the latent variables, program satisfaction, willingness to change, self-efficacy to change, and likelihood to change that were established prior to analysis and based upon review of literature. Unidirectional vectors represent potential causal relationships with the variable at the origin of the vector as an independent variable and the variable at the arrow end as the dependent variable. The bi-directional curved vectors (slings) represent a relationship between two variables whose outcomes exhibit covariance (Hair, et al., 2010). The model represented in Figure 3.1 was tested for goodness of fit using chi-square, chi-square / degrees freedom, root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), and the comparative fit index (CFI) (Schumacker & Lomax, 2004).

In addition to the survey validation procedures, data was analyzed quantitatively in order to interpret the overall results. Descriptive statistics were calculated for individual and school demographic values, including gender, grade level taught, number of years teaching experience, teaching assignment, school locale, school teacher to student ratio, and the percentage of low income students attending each school. Comparisons between the proportions of the demographic subgroups (a) gender, (b) grade-level taught, (c) teaching assignment, and (d) school locale) were made using cross-tabulation, with Chi-square test for independence (actual vs. expected count). Post hoc z-tests were performed to compare proportions for each demographic subgroup. Comparison of means of the demographic subgroups (a) years of non-consecutive teaching (b) school % of low income (c) school student to teacher ratio was conducted using one-way analysis of variance (ANOVA), with Tukey's post hoc analysis of group differences. One-way ANOVA was also used to analyze group means of participant

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responses related to past pedagogical changes in curriculum, instruction, management, assessment, and learning environment.

Qualitative analysis. Qualitative analysis was conducted using a grounded theory approach (Glaser & Strauss, 1967; Strauss & Corbin, 1998), with interview data analyzed using constant comparison methodology (Glaser & Strauss, 1967; Patton, 2015). Grounded theory is developed inductively from a mass of (typically) qualitative data (Strauss & Corbin, 1998). The constant comparative method is used in conjunction with this type of theory development (Glaser & Strauss, 1967) and involves examining, describing, and categorizing data in a process known as coding (Strauss & Corbin, 1998).

Interview transcripts were analyzed and open codes were assigned to participant responses. Open coding involves examining and assigning a name (code) that represents a summary of participant responses to interview questions (Strauss & Corbin, 1998). Open codes were then re-examined collectively and axial codes were subsequently be assigned. Axial coding is a process where open codes are analyzed and grouped into like categories (Strauss & Corbin, 1998). Axial codes are initially established inductively, but as the process continues axial coding becomes more deductive in nature (Strauss & Corbin, 1998). Data categories established through coding were further analyzed for emergent themes of NCD participants and CD participants (categories established with survey). Finally, a formal deductive analysis was conducted by analyzing data in relation to teacher socialization theory.

Credibility and trustworthiness. During analysis, the researcher discussed initial analysis and interpretation of the interview data with an expert researcher in the field of physical education pedagogy. This peer debriefing strategy (Patton, 2015) helped clarify interpretation of the data and helped to reduce researcher bias. Multiple peer debriefing sessions were necessary

to fully interpret the findings. While coding and categorizing themes in the data, it is expected that some participant responses do not fit with previously coded themes (e.g. negative cases). These responses were noted, and the patterns and themes were adjusted until all cases could be accounted for within the data (Patton, 2015). To improve the credibility of the researcher's interpretation of data, member checks were conducted by providing a transcript of the interview and the researcher's interpretation to each participant (Patton, 2015). Participants were asked to comment on the accuracy of the researcher's interpretation, and this feedback was used to make adjustments to emergent themes.

Dependability. Interview data was triangulated with survey data to ensure the dependability of the findings and verify statements made by participants regarding pedagogical changes they have attempted and/or implemented. The results of the survey provided information about participants' satisfaction with their own programs and their perceived ability to make change. These constructs provided a basis to confirm the researcher's interpretation of findings from interviews and verify particular details of individual interview responses (Shenton, 2004).

Investigator bias. In qualitative inquiry, the researcher is the primary instrument for data collection (Patton, 2015). Therefore, to aid others in evaluating the trustworthiness of the findings, it is recommended that qualitative researchers fully disclose their potential biases prior to conducting the research. The following is a statement of the researcher's bias prior to data collection.

As a physical education teacher for six years, I experienced the daily challenges and successes of teaching in a public school. During this time my teaching skills improved dramatically, and I took part in many self- and externally- initiated changes to my teaching practice. I encountered different socializing agents while teaching, including a very influential

administrator who graciously included me (and my physical education program) in conversations about the overall well-being of students. I also experienced two very custodial, minimalist veteran teachers who discouraged me from making changes to my program that would potentially improve student learning and students who influenced my teaching in various ways. After leaving public school teaching for a brief time, I returned in the role of instructional coach for K-12 physical education teachers. While in this position, I further developed my knowledge about high quality physical education programming, and reflected upon my time as a physical education teacher. My instructional coach role provided the opportunity to observe numerous teachers in action. These observations helped me to understand the different contexts in which teachers work, and this is when I asked, "Why do some teachers make changes to their practice, while others do not?"

My experiences as both a physical education teacher and instructional coach have allowed me to view teaching from different vantage points. On the one hand, my experience will enable me to inquire and explore concepts related to teacher change that others with less experience might overlook. On the other hand, my knowledge, experience, and commitment to effective teaching make it more difficult for me to understand those who report little interest in change and cling to more custodial teaching practices.

Reporting of the Results

This investigation was structured in the "three-article" dissertation format. The following is a general description of the three articles that were an outgrowth of data collection and analysis.

Article One

The validation of the survey research tool was described and a summary of a portion of the results was reported in the first manuscript. The article introduces teacher change as an important, yet understudied phenomenon in physical education, and the literature that pertains to teachers' dispositions toward the change process is reviewed. A detailed description of survey construction is provided and the procedures employed to ensure validity and reliability are discussed, including the results of CFA and SEM. The statistical analysis demonstrated that the survey utilized in this study is a valid and reliable research instrument; and due to the large nationally representative sample, it provides generalizable information.

Article Two

The second article in the study builds upon the validation procedures established in article one. The overall results of the survey are reported, including description of past pedagogical changes teachers make relative to curriculum, instruction, class management, assessment, and learning environment. Additionally, the primary initiator (self or external) of change and an examination of the interaction of internal dispositions toward change and past change is provided.

Article Three

In the third article, the results of qualitative analysis of survey and interview data are reported. The quantitative survey provided a means for selecting teachers that are more or less disposed to change. Two groups ranging from highly disposed to change and not change disposed were interviewed regarding factors that facilitate or impede their perceived ability to make pedagogical change. Responses from participants in each group were analyzed separately and responses between the groups were compared.

Figure

Program Satisfaction

Self-efficacy to Change

Likelihood to Change

Willingness to Change

ε_1
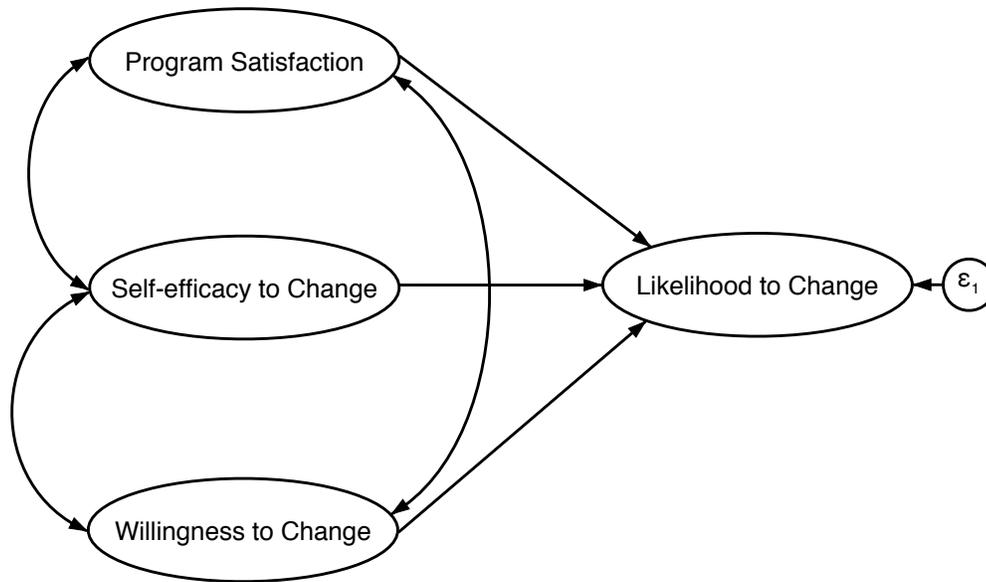
Figure 3.1. Path diagram of the predicted structural equation model of dispositions toward

change and pedagogical changes made in the past 12 months.

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Chapter Four: Article One

Abstract

Program satisfaction (PS), self-efficacy to change (SEtC), and willingness to change (WtC), are dispositions that influence physical education teacher change. The study purpose was to validate an instrument measuring PS, SEtC, and WtC relative to teachers' likelihood to change (LtC). A 15-item Teacher Change Questionnaire-Physical Education (TCQ-PE) was completed by 2,233 physical educators (50.2% female, 16.98 years experience ± 10.10). Exploratory factor analysis indicated a three factor structure of the TCQ-PE (PS [λ=5.4, α=.82], SEtC [λ=1.8, α=.85], WtC [λ=1.3, α=.70]), and a fourth factor, related to LtC (λ=3.9, α=.85). Confirmatory factor analysis, and structural equation modeling affirmed factor structure, instrument validity, and evaluated the hypothesis that decreases in PS and increases in SEtC and WtC predict increases in LtC. Overall, the structural model fit the data (χ^2 (155)= 917.69, $p < .001$, SRMR=.04, RMSEA= .06, CFI= .92). The TCQ-PE is a valid and reliable instrument, measuring teacher dispositions.

Keywords: dispositions toward change, factor analysis, structural equation modeling, validity, reliability

Introduction

Physical education is considered to be an important mechanism for addressing childhood obesity (Institute of Medicine, 2013) because it is widely offered in schools (Pate et al., 2006) and is the only subject in which lifetime physical activity (PA) is a primary outcome (McKenzie & Lounsbery, 2009, 2014). In many physical education programs in the United States (US), however, the potential to address obesity is not realized due to instructional practices that do not promote student learning of knowledge and skills for engagement in lifetime PA (Bulger & Housner, 2009; Kretchmar, 2006; Lee, Burgeson, Fulton, & Spain, 2007). This has led public health experts and leaders in physical education pedagogy to call for reform and urge physical education teachers to change (American Heart Association, 2012; Centers for Disease Control and Prevention, 2013; IOM, 2013; Kretchmar, 2006; McKenzie & Lounsbery, 2014).

The process of change in physical education has implications for public health, yet it is an understudied topic. A small number of studies, which examine the process of change in the context of professional development (PD) initiatives, indicate that targeted changes made by physical education teachers can improve student learning and health outcomes (Jago et al., 2009; McKenzie et al., 1996; McKenzie et al., 2004). These studies, however, were conducted under ideal conditions in which ample resources and support were available to teachers. The typical conditions under which most physical education teachers work are much less ideal than those described in the PD literature (Bulger & Housner, 2009; Lee et al., 2007).
External influences of change such as socializing agents (e.g. students, colleagues, and administrators) have the potential to facilitate or impede teachers' ability to make pedagogical change (Curtner-Smith, Hastie, & Kinchin, 2008; McKenzie & Lounsbery, 2009; Smyth, 1995). In addition, the teacher change literature suggests that three personal dispositions: (a) program

satisfaction, (b) self-efficacy to change, and (c) willingness to change contribute to individual

teachers' likelihood to make changes to their pedagogical practices. These personal dispositions

represent the internal beliefs of individual teachers (Diez, 2007; Murrell, Diez, Feiman-Nemser,

& Schussler, 2010) and include how teachers perceive the necessity of change and their own

ability to successfully implement that change (Vannatta & Fordham, 2004).

Teachers' level of dissatisfaction with current teaching/learning conditions is an

individual disposition (Steinhoff, 2007) that may facilitate attempted pedagogical change

(Maskit, 2013). Shaw, Davis, and McCarty (1991) referred to teachers' dissatisfaction with the

current status of their teaching/learning conditions as perturbation, which they likened to a period

of mental dissonance (p. 162). According to Shaw et al. (1991), all pedagogical change starts

with perturbation, and the decision to act is related to how strongly teachers believe that change

is needed, along with their vision about the likelihood of success. Although only a few

investigators have examined aspects of change in physical education, Cothran (2001) reports that

program dissatisfaction was a disposition that led physical education teachers to adopt new

curriculum models, and Pope and O'Sullivan (1998) document how one physical education

teacher changed teaching strategies due, in part, to dissatisfaction with current methods.

Teachers' propensity to change is not only a product of dissatisfaction with

teaching/learning conditions, but also may be related to individual willingness to change.

Researchers in the field of psychology have used the term innovativeness to describe the degree

to which individuals are willing to make changes to implement innovations, or perceived new

strategies or behaviors (Hurt, Joseph, & Cook, 1977; Goldsmith, 1986). Innovativeness is

measured on multiple scales (Goldsmith, 1986) and successfully predicts behavior change,

including changes to teaching practice (Cassata, Kim, & Century, 2015; Ilhan, Cetin, & Arslan,

2014; Tondeur, Valcke, & Van Braak, 2008; Van Braak, 2001; Vanatta & Fordham, 2004). Although innovativeness has not been directly measured in the physical education literature, the disposition of teacher willingness to change has been reported as impactful in a few studies (e.g., Bechtel & O'Sullivan, 2007; Rovegno & Bandhauer, 1997; Williams & Williamson, 1998).

The concept of self-efficacy is another important disposition related to pedagogical change. Bandura (1995) describes the concept of self-efficacy as a "belief in one's capability to organize and execute the courses of action required to manage prospective situations" (p. 2). Teacher self-efficacy has shown positive associations with multiple educational outcomes, including measures of student achievement (Goddard, Hoy, & Hoy, 2000; Tschannen-Moran, Hoy, & Hoy, 1998) and teacher behaviors such as planning and organization (Allinder, 1994). Teachers with higher self-efficacy have also been shown to be more open and willing to change teaching practices when guided by PD initiatives (Evers, Brouwers, & Tomic, 2002; Guskey, 1988; Stein & Wang, 1988). Furthermore, research suggests that teacher change is a direct function of personal teaching efficacy (Smylie, 1988) and self-efficacy toward making pedagogical changes (Evers, et al., 2002). Though few studies in physical education have investigated teacher self-efficacy, the construct has been associated with increased confidence in adopting new curricula (Martin, McCaughtry, Hodges-Kulinna, & Cothran, 2008).

In order to promote change, it is necessary to understand the change process and recognize that physical education teachers teach under vastly different teaching conditions than teachers in general education (Whipp, Tan, & Yeo, 2007). In particular, it is important to understand the factors that facilitate and impede pedagogical change so that appropriate measures can be taken in the future to support logical approaches to change. Teachers' personal dispositions can act as either a barrier to or facilitator of change, however, no research

instruments exist to specifically measure teacher dispositions toward pedagogical change in either general education or physical education. Therefore, the purpose of this study was to develop and validate an instrument to measure physical education teachers' dispositions toward initiating and implementing pedagogical change. It was hypothesized that the Teacher Change Questionnaire-Physical Education (TCQ-PE) includes factors of (a) program satisfaction (PS), (b) self-efficacy to change (SEtC), and (c) willingness to change (WtC). A second hypothesis was that the TCQ-PE would also accurately predict teachers' likelihood to make future pedagogical change.

Methods

To measure teacher dispositions toward pedagogical change, a research instrument, the TCQ-PE, was developed based on teacher change theory (Shaw et al., 1991), self-efficacy theory (Bandura, 1995), and Diffusion of Innovations research (Hurt et al., 1977; Goldsmith, 1986; Rogers, 2003). The study was approved by the Institutional Review Board.

Instrument Development

The TCQ-PE was developed with close-ended response items on a 5-point Likert-style scale. Blocks of questions were created to assess whether the TCQ-PE included factors of three teacher dispositions toward pedagogical change; (a) program satisfaction (PS), (b) self-efficacy to change (SEtC), and (c) willingness to change (WtC). Additional questions were added to evaluate teachers' self-reported likelihood to make future pedagogical changes. Six demographic questions pertaining to participants' gender, years of teaching experience, grade level(s) taught, licensure status, and other subjects taught were also included. To ensure content validity, items included in the TCQ-PE were selected based on an extensive review of literature, modification of

existing valid and reliable survey items when available, expert review, and pilot testing with a sample of in-service physical education teachers prior to distribution to research participants.

For the purpose of this study, pedagogical change is defined as, any alteration to basic program elements: (a) curriculum, (b) instructional strategies, (c) class management techniques, (d) assessments, and (e) learning environment. This definition is consistent with Fullan's (2007) definition of pedagogical change described as alterations in "instructional resources, teaching approaches, and beliefs about pedagogy theory" (p. 30). Basic program elements represent fundamental aspects of pedagogy located in: (a) Appropriate Instructional Practice Guidelines (Society of Health and Physical Educators, 2009) and (b) Healthy Eaters, Lifelong Movers (HELM) Rubric for High Quality Physical Education (Belansky, Cutforth, Kern, & Scarboro, 2016). These documents describe appropriate teaching practices in physical education and categorize elements of teaching practice into curriculum, instruction, management, assessment, and learning environment.

Program satisfaction. Teacher dissatisfaction is a requisite first step toward teacher change (Shaw et al., 1991). To measure dissatisfaction, six survey items were created to measure teachers' level of satisfaction with basic program elements. The items were scaled: 5 = extremely satisfied, 4 = very satisfied, 3 = moderately satisfied, 2 = not very satisfied, 1 = not at all satisfied. Survey items were generated using existing valid and reliable (Cronbrach's α values ranging from .73 to .82) teacher workplace satisfaction surveys (Fields, 2002) as a guide to item creation and modified to be contextually specific to physical education teachers. Brief descriptions of each basic program element were included with each question. A sample question of program satisfaction (PS) was, "How satisfied are you overall with the curriculum you use to teach physical education?"

Self-efficacy to change. Self-efficacy represents an individual's belief in his or her ability to execute a required action (Bandura, 1995). Bandura (2006) encourages the creation of self-efficacy scales that are "tailored to the particular domain of functioning that is the object of interest" (p. 308). Self-efficacy items in this study were created to measure teachers' self-efficacy to implement pedagogical changes to the basic program elements. It is recommended that self-efficacy items are phrased in terms of participants' perceived confidence in their personal capability (Bandura, 2006). Therefore, five self-efficacy to change (SEtC) items were created and worded as a rating of perceived confidence to make pedagogical change. Bandura (2006) recommends constructing self-efficacy items with face validity and subjecting them to factor analysis to determine internal consistency reliability prior to use, thus no specific previous survey instruments were used to create SEtC items. While Bandura (2006) recommends rating self-efficacy on a 0 -100 confidence scale, it was determined to be in the best interest of internal consistency to use a 5-point Likert scale for items. An example of a SEtC item is, "How confident are you in your ability to make changes to the instructional strategies that you use in your physical education classes? (a) extremely confident (b) very confident (c) moderately confident (d) not very confident (e) not at all confident."

Willingness to change. The valid and reliable (Nunnally's r = .94) Hurt-Joseph-Cook Innovativeness Scale (IS) (Hurt et al., 1977, p. 61) was used to assist in the development of items to measure teacher willingness to change. The IS was specifically designed based on Rogers (1962) Diffusion of Innovations theory to measure an individual's "willingness to change prior to the introduction of an innovation" (Hurt et al., 1977, p. 64). In addition to being evaluated for validity and reliability (Goldsmith, 1986, 1991; Hurt et al., 1977), this scale has been successfully adapted to measure willingness to change regarding teachers' use of instructional

technology (Van Braak, 2001; Vannatta, & Fordham, 2004) and cognitively demanding teaching practices (Cassata et al., 2015).

Previous studies utilizing the Hurt-Joseph-Cook IS show similar patterns of results when items are adapted for use with educators. Therefore, it was considered appropriate to adapt IS items for the current study. Seven items were selected from the IS based on Pallister and Foxall's (1998) examination of the psychometric properties of the IS, in which they identified items that demonstrated the highest reliability coefficients. Seven items were considered to be most relevant to the physical education teaching context and were adapted for language. A 5-point Likert scale was applied to the items to ensure consistency throughout the survey. A sample item adapted from the Hurt-Joseph-Cook IS was, "How enjoyable do you find trying out new ideas and teaching methods in your physical education program? (a) extremely enjoyable (b) very enjoyable (c) moderately enjoyable (d) not very enjoyable (e) not at all enjoyable."

Likelihood to make future changes. A block of five items designed to determine participants' likelihood to make pedagogical changes in the future was included along with the TCQ-PE in order help evaluate the hypothesis that dispositions are predictive of future changes. The likelihood to change items (LtC) assessed the participants' self-reported likelihood to attempt change to the basic program elements within the forthcoming 12 months. A sample LtC item was, "How likely are you to make class management changes in the next 12 months? (a) extremely likely (b) very likely (c) moderately likely (d) not very likely (e) not at all likely."

Expert review. Following the initial pooling of potential questionnaire items, feedback was sought from multiple experts in several different areas including physical education pedagogy, general education, public health, and survey research. In total, 11 experts from various

fields reviewed three drafts of the questionnaire. Appropriate changes were made based on suggestions from expert reviewers, thus increasing content validity.

Pilot study. A pilot study of the TCQ-PE was conducted in order to test the functionality of the data collection procedures and establish dependability by assessing test-retest reliability. The TCQ-PE was initially sent in an electronic version (Qualtrics®) to 40 physical education teachers with instructions to complete all questionnaire items and provide feedback via email to the lead researcher regarding the structure, flow, syntax, readability, and ease of understanding of the questions and available responses. Minor wording changes were made to a small number of questions, but no changes were made to the structure or flow of the survey. The time needed to complete the survey was also recorded during pilot testing, and all respondents were able to finish the questionnaire in approximately 12 minutes. The pilot participants completed the survey on two separate occasions, with no less than two weeks separating the first and second completion. Pearson's r statistic was calculated for all variables. No individual within-subjects values measured below .85, and overall the group scores between the first and second trial were strongly correlated r (40) = .92, p < .01, thus test-retest reliability was considered acceptable.

Participant Recruitment

In order to help ensure a representative sample, one US state from each of the six Society of Health and Physical Educators (SHAPE) America districts was randomly selected: (a) Washington [Northwest District], (b) Utah [Southwest District], (c) Minnesota [Central District], (d) Virginia [Southern District], (e) Illinois [Midwest District], and (f) Delaware [Eastern District]. A listing of all public schools in each of these six US states, serving students in kindergarten through twelfth grade, was downloaded from the National Center for Education Statistics (NCES) online public school database (n.d). The schools in each state were stratified

by student grade level and contact information (work email, school mailing address, and office telephone number) was manually retrieved via official school websites. To reduce the possibility of response bias, only one teacher from each school was selected for participation.

Efforts were made in order to make samples from each state similar relative to the number of physical education teachers selected, however, because Delaware and Utah have much lower numbers of schools, and thus fewer teachers, adjustments were made to the number of teachers selected from geographically proximal states. For example, the number of teachers selected from Virginia was increased to account for low numbers of teachers available in Delaware, and more Washington teachers were selected to account for low available numbers of teachers in Utah. Table 4.1 shows the number of teachers pre-selected for participation in each state. The needed sample size was estimated using Cochran's (1963) formula for estimating a proportion sample of extremely large or unknown populations ($n_0 = \frac{z^2 pq}{e^2} = 385$), where $z = 1.96$, $p = .5$, $q = .25$, and $e^2 = .05$.

Data Collection

The survey was sent to all participants first via email using Qualtrics® online survey software. The email distribution message included an overview of the study and a link to the Qualtrics® survey site where participants were required to provide consent to participate prior to beginning the questionnaire. To maximize survey response, a paper version of the survey was distributed to those participants not responding by email after three reminders, and phone administration of the survey was conducted for participants who preferred neither electronic nor paper versions of the survey. In all, 5,287 physical education teachers were contacted and recruited to participate in the study. A total of 2,423 teachers (46%) responded and consented to participate in the study.

Data Analysis

Analysis of the survey data included the use of correlational analysis, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA) in conjunction with structural equation modeling (SEM). The purpose of these analyses were to: (a) evaluate the factor structure of the TCQ-PE, (b) validate the TCQ-PE as an instrument to measure factors related to physical education teacher change, and (c) to test the hypothesis that the constructs, (a) PS, (b) SEtC, (c) WtC, and (d) likelihood to change (LtC), are related. Prior to analysis, the data collected on the constructs (PS, SEtC, WtC, and LtC) were evaluated for normality. Komolgorov-Smirnov (K-S) tests values on each construct were statistically significant ($p < .001$), however, given the large sample size, any small deviation of normality would yield a significant K-S tests (Field, 2009). Histograms of the data were inspected and appeared approximately normal, Q-Q plots showed only minor deviations from expected normal, and since the sample size was large, the data were assumed to be approximately normally distributed.

Exploratory factor analysis. In order to ensure the integrity of the factor structure and potentially eliminate questionnaire items with insufficient item loading ($< .50$), loading in non-theoretical ways, or significant cross loadings of factors higher than .32 (Brown, 2015) EFA was conducted on a subsample of survey response data. Data cleaning, descriptive statistics, and EFA were conducted using IBM SPSS version 22.0. Incomplete data were encountered during cleaning, and were not included in factor analysis, thus overall sample size was reduced ($N = 2,233$). The EFA, using maximum likelihood extraction and oblique rotation (direct oblimin), was conducted on 18 items (PS = 6 items, SEtC = 5 items, WtC = 7 items) in the survey. Maximum likelihood extraction was chosen a priori and was considered appropriate because the sample was randomly acquired, data were approximately normal, and the theoretical

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underpinnings of the constructs are well developed; thus there was a high likelihood that latent

variables would load in a predictable manner aligned with theory (Field, 2009). In addition,

maximum likelihood allows for computing a wide range of goodness-of-fit indexes, and

significance testing of factor loadings (Fabrigar, Wegnener, MacCallum, & Strahan, 1999). The

oblique rotation method was chosen because it is preferable when there are theoretical grounds to

suppose underlying factors correlate (Field, 2009). Teacher change theory (Shaw, et al., 1991)

suggests PS, SEtC, and WtC are strongly related. The sample was randomly split and EFA was

conducted on one half (n = 1,116) of the eligible cases (Cudek & Browne, 1983). The adequacy

of the sample size was estimated and deemed appropriate by the Kaiser-Meyer-Olkin (KMO)

value (KMO = .89). Bartlett's test of sphericity χ^2 (153) 6981.35, $p < .001$ indicated that item

correlations were sufficient for EFA. Kaiser's criterion of 1.0 eigenvalue was used in the

decision to retain or not retain factors. The internal consistency of the TCQ-PE was assessed by

reliability analysis in which the mean of multiple split-half reliability procedures were calculated

and reported as Cronbrach's alpha.

Confirmatory factor analysis. In order to confirm the factor structure identified during

EFA and test the hypothesized relationship of the factors with a separate data set, CFA was

conducted on a second (not used in EFA) randomly selected half (n = 1,117) of the total cases

collected via the TCQ-PE survey. Multiple goodness-of-fit indices were used to evaluate model

fit. The root mean square error of approximation (RMSEA) and the standardized root mean

square residual (SRMR) were chosen as fit indices based on Hu and Bentler's (1999) two-index

strategy for assessing model fit. Comparative Fit Index (CFI) was included due to the CFI's

resistance to sample size bias (Hu & Bentler, 1999). According to Hu and Bentler (1999),

RMSEA values less than or equal to .06, SRMR values equal to or below .08, and CFI values

equal to or above .95 are indicators of good model fit. The chi square goodness of fit statistic was also calculated, but was not prioritized in the final decision of model fit due to chi square sensitivity to large sample sizes (Jackson, Gillaspy, & Purc-Stephenson, 2009); nearly all large-sample chi square tests are significant (Brown, 2015). In addition, the ratio of chi-square to its degrees of freedom (χ^2/df) was calculated with a value of ≤ 3.00 indicative of good fit (Schreiber, Nora, Stage, Barlow, & King, 2006).

The CFA was also used to examine convergent and discriminant validity of the TCQ-PE. Convergent validity was evaluated through strength of factor loadings, composite reliability (CR), and average variance extracted (AVE) scores (Hair, Black, Babin, & Anderson, 2010). Discriminant validity was evaluated between constructs by comparing their AVE values with their squared correlations (Fornell & Larcker, 1981). The CFA/SEM procedures were conducted using STATA Version 14. Demographic comparisons of the total sample, EFA subsample, and CFA subsample are provided in Table 4.2.

Descriptive statistics and correlational analysis. Correlational analysis was conducted in order to evaluate the relationship between the TCQ-PE constructs (PS, SEtC, WtC) and teachers self-reported likelihood to make future changes (LtC). Composite scores from the CFA subsample were calculated for the TCQ-PE subscales and the LtC subscale. Descriptive statistics (mean, standard deviation, range, skewness/kurtosis) along with bivariate correlations (Spearman's rho) between all subscales were calculated. It was hypothesized that the subscale items of PS would negatively correlate with the items of LtC, and both SEtC and WtC subscales would positively correlate with the LtC subscale. Statistical significance was evaluated at the $p <$ .05 level.

Results

During EFA, four factors had eigenvalues over 1.0 and cumulatively explained 57.12% of the variance. The scree plot bent sharply upward after the third factor, suggesting retaining factors 1-3. The first factor cluster represented items associated with program satisfaction (PS), the second factor cluster items were associated with self-efficacy to change (SEtC), and the third factor cluster items were related to willingness to change (WtC). The fourth factor cluster represented three items associated with WtC and had relatively high (.426, .433, .540) loadings with each other (eigenvalue = 1.103), but not with the WtC items in the third factor cluster. The WtC items were adapted from the Hurt-Joseph-Cook Innovativeness Scale, which measures willingness to change, thus the three items theoretically should have loaded with the other WtC items. The three items were: (a) "How cautious are you about adopting new ideas and teaching methods?" (b) "How reluctant are you in adopting new ideas and teaching methods?", and (c) "How often do you trust new ideas and teaching methods before seeing others use them successfully?" Due to the items relatively high interclass correlations, but lack of factor loading with other WtC items, it was determined that they were measuring a separate factor not aligned with a willingness to change, but rather an apprehensiveness to change. The fourth factor was subsequently referred to as Apprehension to change, (Table 4.3) but since it is not specifically aligned with teacher change theory, it was dropped from further analysis.

The remaining three-factor model that included PS (Factor 1), SEtC (Factor 2), and WtC (Factor 3) aligned with previously theorized constructs, and therefore was retained in CFA/SEM analysis; factor loadings were all equal to or greater than .50. Table 4.3 shows the factor loadings of the TCQ-PE items, eigenvalues of each of the four factors, percent of total variance each factor accounted for, and scale reliability values (Cronbrach's α).

Initial CFA/SEM analysis of the three-factor model showed acceptable fit ($\chi^2(162) =$ 1109.54, p < .001, SRMR = .05, RMSEA = .07, CFI = .91), however, modification indices (Langrange multiplier) indicated that opening up covariance pathways between individual item error terms would potentially strengthen the model fit. Each potential modification was first and foremost, evaluated according to the theoretical underpinnings of each individual construct. Only theoretically justifiable modifications were made (Schreiber, 2008); then only Langrange multipliers greater than 10 were considered (Bowen & Guo, 2012) so to limit modification to those with the greatest potential to strengthen the model. Nine covariance pathways were added between the error terms of selected individual items in the four latent variables, PS, SEtC, WtC, and LtC (Figure 4.1). The opening of these particular pathways is theoretically justified because the respective questions in each item would likely share variance (Steiger, 1990) according to teacher change theory (Shaw et al., 1991). For example, pathways were added between the error term of curriculum satisfaction (ε_1) with management satisfaction (ε_3) and learning environment satisfaction (ε_3). Changes in satisfaction with curriculum are likely to be concurrent with changes in satisfaction with management and the learning environment, but not necessarily concurrent with satisfaction of other aspects of the program, such as instruction practices (ε_2) and assessments (ε_4). Similar logic was applied throughout, and modification resulted in small changes to model fit.

The results of CFA/SEM with minor modification indicated that the hypothesized model was a good fit for the data ($\chi^2(155) = 917.69$, p < .001, SRMR = .04, RMSEA = .06, CFI = .92). While the chi square was significant, indicating lack of fit, it is noted that chi square tests with samples larger than 400 are nearly always significant (Brown, 2015). The ratio of chi square to its degrees freedom (χ^2/df) is an appropriate adjustment to the chi square goodness of fit

measure with large sample sizes, and it is acknowledged that values ≤ 3.00 indicate good fit, and

values up to 5.0 may be acceptable (Schreiber et al., 2006). The χ^2/df for the modified model

was (χ^2/df=969.65/155)=6.25, indicating lack of fit based on adjusted chi square. In spite of chi

square measures indicating lack of fit, the model was collectively evaluated and was considered

a fit for the sample due to the acceptable goodness of fit values obtained through SRMR,

RMSEA, and CFI. According to Hair et al (2010, p. 654) more complex models with large

sample sizes should not be held to strict standards of fit, as goodness of fit is inversely related to

sample size and the number of variables in the model. Because of the similarity of the

hypothesized and measured models, and support in the literature for the construct relationships,

no additional models were tested. Figure 4.1 includes the path diagram for the final model.

The convergent validity of the latent variables in the model were evaluated by examining

the strength of factor loadings, the average variance extracted (AVE), and composite reliability

(CR) values. Acceptable values for convergent validity are factor loadings above .50 (Brown,

2015) and AVE > .50 (Fornell & Larcker, 1981), and composite reliability is considered

acceptable when CR > .70 (Hair et al., 2010). The AVE and CR values for SEtC were

sufficiently high (AVE = .56, CR = .86), and values for PS were acceptable (AVE = .47, CR =

.84); in spite of the AVE being slightly below the .50 cutoff, composite reliability was well

above .70 and factor loadings were sufficiently high, thus we considered the measured items to

reliably converge on the PS factor. Both AVE and CR values for WtC (AVE = .36, CR = .69),

were below acceptable cutoffs, though the CR value was only slightly below, indicating a lack of

complete convergence. The WtC factor, however, was still considered in the final model due to

its strong theoretical support, adequate strength of factor loadings, and the fact that the items

were adapted from a survey instrument with repeated strong validity and reliability measures

(Goldsmith, 1986; Hurt et al., 1977). Related to the overall model, LtC convergent validity values were also in the acceptable range (AVE = .52, CR = .84).

Discriminant validity was evaluated by comparing the AVE values of each construct with the squared inter-construct correlations between each factor (Hair et al., 2010). All of the construct AVE values for constructs in the TCQ-PE were above .35 (Table 4.5) and no squared correlations between any construct exceeded .24 (Table 4.4), therefore there were no issues with discriminant validity among any constructs of the TCQ-PE.

Convergent and divergent validity of the overall model was evaluated by calculating correlations (Spearman's ρ) of TCQ-PE constructs (PS, SEtC, and WtC) with LtC (Table 4.4). All TCQ-PE constructs were significantly ($p < .01$) correlated with LtC and in the predicted directions, with PS negatively correlated ($\rho = -.18$) and SEtC ($\rho = .11$) and WtC ($\rho = .29$) positively correlated to LtC. Based on Cohen's (1988) criteria for small ($\rho = 0.10$), medium ($\rho = 0.30$), and large ($\rho = 0.50$) effect sizes, all these correlations with LtC were considered small in size. The correlations are significant, but not high enough ($> .85$) to evoke concerns for multicollinearity (Grewal, Cote, & Baumgartner, 2004). These findings support convergent and divergent validity of the structural model and suggest that the TCQ-PE measures are related, but distinct constructs that are associated with LtC (Hair, et al., 2010).

Results of the structural model (latent to latent variable analysis) showed a significant negative relationship between PS and LtC ($\beta = -.33, p < .001$), along with significant positive relationships between SEtC and LtC ($\beta = .11, p < .05$) and WtC and LtC ($\beta = .37, p < .000$), respectively (See Table 4.5). The data in the structural model suggest that the TCQ-PE is predictive of LtC, such that lower values of program satisfaction (PS) combined with higher self-

efficacy to change (SEtC) and willingness to change (WtC) predict a higher likelihood to make future changes (LtC).

Discussion

The purpose of this study was to develop an instrument for measuring physical education teachers' dispositions toward making pedagogical change to their programs. Teachers' individual dispositions toward change are internal factors that may facilitate or impede the change process. In order to promote positive change among physical education teachers, it is necessary to understand the nature of barriers to and facilitators of the change process. In the current study, results of factor analysis and SEM confirmed the hypothesis that three individual dispositions (PS, SEtC, and WtC) predict teachers' likelihood of making future change (LtC).

Since the TCQ-PE was completed by a large, nationally representative sample, the results can be generalized to other US public school physical education teachers, thus providing context about the current nature of teachers' dispositions toward change. In addition, because the structural model of the latent variables support the existence of a causal relationship between dispositions and likelihood to make future change (LtC), it is appropriate to aggregate LtC values for use in categorizing and discovering patterns of receptiveness to change among groups of individual teachers.

Future research in physical education pedagogy will benefit from the addition of a valid and reliable instrument such as the TCQ-PE because it will allow researchers to categorize teachers based on their disposition toward change. Through categorical analysis, it is possible to hold teachers' internal dispositions constant and make comparisons based on other potential factors such as the external factors associated with change. Additionally, since teachers' beliefs about education and the educational process are known to influence instructional decision-

making (Murrell et al., 2010), and dispositions are considered to be an embodiment of those beliefs (Diez, 2007), measuring dispositions provides insight into what teachers believe about physical education. Research on the topic of teachers' beliefs and related dispositions has the potential to yield information that could ultimately inform teacher education and educational reform efforts.

The TCQ-PE instrument may also be appropriate for use in professional development, as it provides a description of teachers' confidence and willingness to make changes to their teaching. The professional development literature indicates that teachers' acceptance, or buy-in to professional development initiatives is a most important prerequisite to successful change (Fullan, 2007; Guskey, 2002). Teacher buy-in to professional development is strongly related to whether or not teachers believe change is necessary and their perceived capability to implement new ideas associated with PD initiatives (Patton & Griffin, 2008; Ward & Doutis, 1999). Therefore, knowing teacher dispositions toward change (program satisfaction, self-efficacy to change, and willingness to change) can enable administrators of professional development to strategically design initiatives to target areas where teachers are more or less receptive to procedures related to change. For example, by using the TCQ-PE administrators of professional development may find that teachers are dissatisfied with their current programs, but lack the confidence to make change. In this case, it might be more appropriate to train teachers to utilize new teaching techniques rather than make efforts to influence their teaching philosophies.

While the current study demonstrates several strengths, including a large sample size, a high degree of sample representativeness, and sound theoretical framework from which the methods and research questions were derived, it is not without limitation. Though the sample of participants was drawn from the six SHAPE regional districts, two of the randomly selected

states included low available numbers of potential participants. This limitation was addressed by compensating with proximal states, but ideally would have included even numbers in each state. With this limitation in mind, it is appropriate to generalize the results relative to geographic regions of the US.

Prolonged high quality physical education programming has the potential to play a role in improving public health, and physical education teachers' practices are crucial to this function. Research over the past few decades suggests that curricular reform and physical education teacher change is necessary in order to improve programs that have the potential to make a meaningful impact on aspects of children's health such as reducing the childhood obesity epidemic. The current study is central to understanding teachers' perception of and receptivity to undergo pedagogical change.

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Tables and Figure

Table 4.1

Stratified sample of PE teachers selected for participation from six US states

	Elementary	**Middle school**	**High school**	**Multi-level**	**Total**
Delaware	63	42	40	41	186
Utah	167	144	123	62	496
Minnesota	415	287	197	166	1065
Virginia	478	334	247	86	1145
Washington	480	339	317	67	1203
Illinois	453	364	285	90	1192
Total	**2056**	**1510**	**1209**	**512**	$N = \textbf{5287}$

Table 4.2

Aggregate individual and school demographics for total sample and analytic subsamples.

	Eligible sample (n = 2,233)		EFA subsample (n = 1,116)		CFA subsample (n = 1,117)	
	Participants	**Mean (SD)**	**Participants**	**Mean (SD)**	**Participants**	**Mean (SD)**
Individual demographics						
Male	1,112		538		574	
Female	1,121		578		543	
Years teaching		16.98 (10.10)		16.99 (9.97)		16.96 (10.24)
Licensed in PE	2,144		1,070		1,074	
Not licensed in PE	89		46		43	
PE only	1,305		655		650	
PE + 1 or more subjects	928		441		467	
School demographics						
% Low income		43.2% (26.0)		43.9% (26.2)		42.6% (25.7)
Student:teacher ratio		17.15 (4.19)		17.08 (4.19)		17.21 (4.19)
Urban	397 (17.8%)		206 (18.5%)		191 (17.1%)	
Suburban	1028 (46.0%)		526 (47.1%)		502 (44.9%)	
Township	294 (13.2%)		143 (12.8%)		151 (13.5%)	
Rural	514 (23.0%)		241 (21.6%)		273 (24.4%	

Note. Years teaching = years of teaching experience

Licensed in PE = currently holds a valid PE teaching license

Not licensed in PE = does not hold a current valid PE teaching license

PE only = number of teachers whom PE is the only subject they are assigned to teach

PE + 1 or more subjects = number of teachers whom are assigned to teach PE and at least one other school subject, including health

% Low income = number of students receiving free or reduced lunch prices ÷ number of enrolled students; Student:teacher ratio = number of students ÷ number of teachers per school

Table 4.3

Summary of exploratory factor analysis results for the Teacher Change Questionnaire – Physical Education (N = 1,211)

TCQ-PE Items	Factor Loadings			
	Program satisfaction (Factor 1)	Self-efficacy to change (Factor 2)	Willingness to change (Factor 3)	Apprehension to change (Factor 4)
Overall satisfaction with program	.85			
Satisfaction with current curriculum	.76			
Satisfaction with current instructional strategies	.73			
Satisfaction with current learning environment	.70			
Satisfaction with current management techniques	.54			
Satisfaction with current assessment methods	.50			
Confidence to make management changes		.81		
Confidence to make instructional changes		.81		
Confidence to make curricular changes		.73		
Confidence to make assessment changes		.67		
Confidence to make learning environment changes		.67		
Seeks new ideas and ways of teaching			.69	
Considers self inventive or creative in teaching			.59	
Enjoys new ideas and ways of teaching			.58	
Accepts new teaching methods			.55	
Cautious of new ideas and teaching methods				.43
Reluctance to try new ideas or teaching methods				.43
Trusts new ideas and teaching methods				.54
Eigenvalues	5.38	2.49	1.30	1.10
Percent of variance	29.9	13.9	7.2	6.1
Cronbrach's α	.82	.85	.70	.51

Note: only factor loadings greater than .40 are presented; Factor 4 was not retained for CFA/SEM due to high factor loadings not aligned with teacher change theory.

Table 4.4

Descriptive statistics and construct correlation matrix of the Teacher Change

Questionnaire – Physical Education (TCQ-PE)

		PS	SEtC	WtC
TCQ-PE constructs	Program satisfaction (PS)	1.0	.24	.03
	Self-efficacy to change (SEtC)	.49**	1.0	.18
	Willingness to change (WtC)	.18**	.43**	1.0
Likelihood to change (LtC)		-.18**	.11**	.29**
Mean		3.20	2.92	3.31
Standard Deviation		.558	.603	.583
Skewness		.258	.291	-.036
Kurtosis		.477	-.104	-.170
Minimum		1.00	1.50	1.00
Maximum		5.00	5.00	5.00

$N = 1{,}117$; All constructs were measured with a five-point Likert-type scale; Correlations

coefficients calculated as 2-tailed Spearman's ρ; $^{**}p < .01$

Note: The values under diagonal are correlation coefficients, diagonal values represent the

construct variances, and the values over the diagonal are correlations squared.

Values associated with Likelihood to change (LtC) are correlations (Spearman's ρ) with

the TCQ-PE constructs.

Table 4.5

Construct validity of the latent and manifest variables of the Teacher Change

Questionnaire – Physical Education (TCQ-PE).

	ß	SE	z	p	95% CI	AVE	CR
Structural model							
Program Satisfaction	-.33	.04	-9.07	.000	-.41 – -.26		
Self-efficacy to Change	.11	.05	2.47	.014	.02 – .21		
Willingness to Change	.37	.04	8.81	.000	.29 – .45		
Measurement model							
Program satisfaction (PS)						.47	.84
PS1* – curriculum satisfaction	.74	.02	47.45	.000	.72 – .78		
PS2 – instruction satisfaction	.65	.02	35.88	.000	.61 – .69		
PS3 – management satisfaction	.53	.02	22.67	.000	.48 – .57		
PS4 – assessment satisfaction	.56	.02	24.50	.000	.52 – .59		
PS5 – learning env. satisfaction	.73	.02	43.04	.000	.69 – .76		
PS6 – overall satisfaction	.84	.01	76.28	.000	.82 – .86		
Self-efficacy to change (SEtC)						.56	.86
SEtC1* –curriculum confidence	.73	.02	46.35	.000	.70 – .76		
SEtC2 – instruction confidence	.83	.01	73.20	.000	.81 – .85		
SEtC3 – management confidence	.79	.01	55.41	.000	.76 – .82		
SEtC4 – assessment confidence	.66	.02	35.62	.000	.62 – .70		
SEtC5 – learning env. confidence	.71	.02	43.96	.000	.68 – .74		
Willingness to change (WtC)						.36	.69
WtC1* – accepts new ideas	.51	.03	18.30	.000	.46 – .57		
WtC2 – enjoys new methods	.64	.02	26.14	.000	.59 – .69		
WtC3 – seeks new methods	.70	.02	30.11	.000	.64 – .73		
WtC4 – inventive & creative	.54	.03	21.83	.000	.51 – .61		
Likelihood to change (LtC)						.52	.84
LtC* – curriculum	.61	.02	30.95	.000	.58 – .66		
LtC – instruction	.89	.01	70.12	.000	.86 – .91		
LtC – management	.66	.02	35.06	.000	.63 – .70		
LtC – assessment	.66	.02	36.06	.000	.63 – .70		
LtC – learning environment	.76	.02	48.63	.000	.73 – .79		

Note: Structural model includes only constructs associated with TCQ-PE; LtC statistics were

included in the measurement model but are not constructs of the TCQ-PE.

ß in the structural model = standardized coefficients between latent variables; ß in the

measurement model = standardized factor loadings between manifest and latent variables

SE = standard error; AVE = average variance extracted; CR = composite reliability

* = factor loadings fixed to 1.00
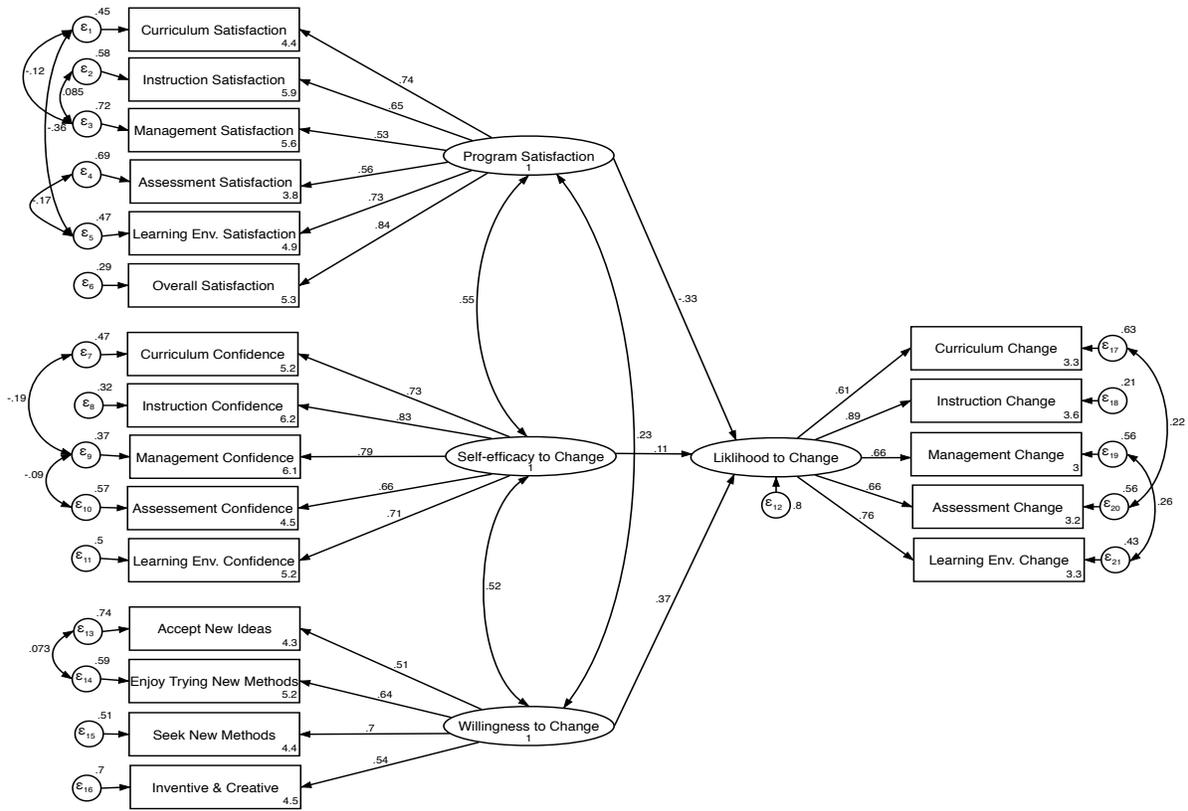
Figure 4.1. Path diagram and latent factor solutions of the Teacher Change Questionnaire –

Physical Education with standardized factor loadings, $\chi^2(155) = 917.69$, $p < .001$, $\mathcal{X}^2/df =$

6.25, SRMR = .04, RMSEA = .06, CFI = .92

Chapter Five: Article Two

Abstract

Physical education is critical to addressing childhood obesity, yet many school-based programs do not meet established quality standards and teachers are called upon to change. Little is known about how change is initiated and its associated internal and external factors. **Purpose:** The purpose of this study was to investigate physical education teacher change that is self- and externally initiated, and examine dispositions toward the change process relative to initiation. **Method:** A random national sample of physical educators representing each SHAPE America regional district participated in a survey measuring past programming changes, primary initiators of change, and internal dispositions toward change. In total, 2,423 teachers (46% response) completed either electronic, paper, or telephone questionnaires. **Results:** Teachers most often made minor curriculum changes and added/subtracted student assessments (primarily informal assessments) least often. Self-initiated (bottom-up) change was most frequently (83.1% of the time) reported. Externally initiated (top-down) changes were less frequent, and were most often associated with professional development. Teachers reported principal involvement in both top-down and bottom-up change process to be minimal. Teachers who are more internally disposed to making future changes reported making significantly ($p < .01$, $\eta^2 = .046$ to $.119$) more past changes than those who are less disposed to change. **Conclusions:** Physical education teachers primarily self-initiate minor programming changes without involvement from administration. Externally initiated change is infrequent, and mostly involves professional development. Internal dispositions toward change are individual and enduring such that teachers who have made more past changes are more likely to also make future changes.

Keywords: teacher dispositions, physical education, teacher change, reform

Introduction

Obesity in the United States (US) has reached epidemic status (Wang & Beydoun, 2007), and current statistics show that US children aged 2-19 years old experience obesity at the highest levels ever recorded (Ogden, Carroll, Fryar, & Flegal, 2015). Public health organizations target obesity reduction as a priority (US Department of Health and Human Services, 2010) and recommend that schools contribute to obesity prevention efforts by increasing opportunities for physical activity and physical education throughout the school day (Centers for Disease Control [CDC], 2013).

Physical education has the potential to play a role in addressing the obesity epidemic because it is offered in most schools (Pate et al., 2006) and is the only subject in which physical activity is a primary outcome (McKenzie & Lounsbery, 2014). Studies examining the effectiveness of physical education programming on markers of health such as body weight reduction, show promising results (McKenzie et al., 1996, 2004), however, current physical education programs may not be effective in addressing obesity due to inadequate instruction (Lee, Burgeson, Fulton, & Spain, 2007; Rink, 2013).

Improving instructional quality has been the focus of reform efforts by the Society of Health and Physical Educators (SHAPE) America, and has included the adoption of standards and the development of student learning targets (SHAPE America, 2013). Most US states have adopted physical education content standards that mirror the national standards and the majority of states have legislation requiring standards-based instruction (National Association for Sport and Physical Education & American Heart Association, 2012). Recent studies, however, indicate that the majority of physical education instruction in US schools is not aligned with standards

(Lee et al., 2007), thus in many programs student learning of knowledge and skills for lifelong physical activity is unlikely to occur.

Leading researchers in both physical education and public health agree that providing high quality physical education instruction is necessary for health benefits to be realized (Institute of Medicine [IOM], 2013) and for appropriate student learning and skill development to occur (CDC, 2013). Given the current state of physical education, and the need to increase the quality of instruction, physical education teachers are encouraged to make changes to their programs (McKenzie & Lounsbery, 2014). There exists, however, a gap in the literature related to teacher change and how it relates to an improvement in effectiveness. Therefore, to promote physical education teachers' adoption of best practices, more needs to be known about teacher change.

Historically, research on teacher change has been conducted in reference to external sources such as government, school administration, or professional development initiatives suggesting or requiring teachers to make changes (Richardson, 1998), thus the typical research perspective is *top-down* relative to teacher change. Some scholars argue that top-down change is often resisted by teachers and is less sustainable (Guskey, 2002; Fullan, 2007; Richardson, 1998). For example, results from a study of physical education teachers support the notion of ineffective top-down change, as participants (physical education teachers) were unable to implement a top-down mandated curriculum change due to a mismatch of their individual understanding of physical education and differences in their teaching styles (Cothran, McCaughtry, Kulinna, & Martin, 2006).

Little research has investigated the change process when it is self-initiated by teachers in a *bottom-up* manner. Research conducted, primarily in general education, suggests that teachers

regularly and frequently make instructional changes based on their perception of what is working for them (Richardson, 1998). A recent study of classroom teachers showed that changes to instruction were initiated independently approximately 75% of the time during a school year (Maskit, 2013). Some researchers claim that bottom-up change is not only more frequent, but also more sustainable (Richardson, 1998). Fullan (2007) contends that teachers who self-initiate changes have already worked through the subjective aspects of the change process, and are ready to implement without reserve. Further support of bottom-up change can be found in case studies of physical education teachers who made large-scale curriculum changes successfully, and demonstrated long-term commitment to them (Cothran, 2001).

Physical education teachers experience a high degree of autonomy in the workplace (Whipp, Tan, & Yeo, 2007), thus their internal decision-making processes are highly influential to their instruction. Shaw, Davis, and McCarty (1991) theorized that teacher's individual dispositions toward change are the primary determinants of whether or not teachers attempt to initiate pedagogical changes. Dispositions are defined as the tendency to think and behave in particular ways, and they are representative of teachers' beliefs about the purpose of education (Murrell, Diez, Feiman-Nemser, & Schussler, 2010).

Identified in the literature base in both general education and physical education are three dispositions that have the potential to affect teacher change: (a) dissatisfaction with current programming/practice, (b) self-efficacy to change, and (c) willingness or openness to change. Teacher's dissatisfaction with their current programming/practice is referred to as *perturbation* (Shaw et al., 1991), and is considered to be prerequisite to attempting change. If teachers are dissatisfied with the status quo, they must also possess the confidence to actually make changes to their teaching practice and/or programs (Shaw et al., 1991). The confidence to attempt to make

changes can be described as a type of self-efficacy. Bandura (1995) defines self-efficacy as a "belief in one's capability to organize and execute the courses of action required to manage prospective situations" (p. 2). Self-efficacy in teaching has been associated with change in a range of teacher behaviors including curriculum planning and organization (Allinder, 1994), and adopting new physical education curriculum (Martin, McCaughtry, Hodges-Kulinna, & Cothran, 2008).

Another teacher disposition that is prerequisite to change is the willingness or openness to change. Teachers' willingness to change is based to some degree upon an internal drive to innovate and adopt new teaching practices (Fullan, 2007). The term *innovativeness* is used in the field of psychology to describe an individual willingness to change to incorporate new ideas and practices (Goldsmith, 1986). Innovativeness as a measured construct in education research studies has successfully predicted teacher change, including technology use and instructional strategy changes (Cassata, Kim, & Century, 2015; Vannatta & Fordham, 2004). While innovativeness has not been directly measured in physical education studies, research has shown that teachers' individual willingness to change is associated with positive change, including adopting new curriculum and instructional techniques (Bechtel & O'Sullivan, 2007).

Teacher change in physical education is a relatively unexplored topic that has implications for future instructional quality. Experts in the field have called for reform among physical education teachers (CDC, 2013; IOM, 2013; McKenzie & Lounsbery, 2014), yet little is understood about the teacher change process. For example, no studies have examined the types of changes teachers make that are self-initiated (bottom-up) versus externally initiated (top-down). How pedagogical changes are initiated is critical to understanding the change process, as it provides insight to teachers' commitment to the change process and their willingness to

attempt to change their programs. Furthermore, little research has been conducted on internal factors related to change such as teachers' dispositions toward the change process, that are likely to greatly influence change given the isolated conditions in which physical education teachers typically work (Whipp et al., 2007). The purpose of this study, therefore, was to investigate physical education teacher change when it is self- and externally initiated, as well as examine how individual characteristics and dispositions toward the change process relate to initiation of change. The following research questions guided inquiry: (a) What types of pedagogical changes do physical education teachers make that are self- and externally initiated? (b) How are individual characteristics and dispositions toward the change process related to pedagogical changes physical education teachers initiate and attempt to implement?

Methods

To investigate the types of pedagogical changes physical education teachers make that are self- and externally initiated, as well as examine teacher dispositions toward the change process, a survey was developed and distributed to a national sample of physical education teachers. The survey included items from a previously validated Teacher Change Questionnaire-Physical Education (TCQ-PE) (Kern & Graber, in review). Institutional review board approval was granted prior to conducting all research procedures.

Participants

A sample frame of participants was generated by randomly selecting one US state from each of the six SHAPE America regional districts: (a) Washington [Northwest District], (b) Utah [Southwest District], (c) Minnesota [Central District], (d) Virginia [Southern District], (e) Illinois [Midwest District], and (f) Delaware [Eastern District]. A database that included every public school serving students in kindergarten through twelfth grade in each state (National Center for

Education Statistics [NCES], n.d.) was then used to stratify the sample by student grade level. Additional information gathered from the NCES database included the locale description (urban, suburban, township, or rural), the student to teacher ratio, and the percentage of low-income students in each school. Individual contact information for physical education teachers (work email, school mailing address, and office telephone number) working in each school was manually retrieved via official school websites.

All teachers were invited to participate in the study via an email message that included a link to an online survey platform (Qualtrics®). Those who did not complete the online version of the survey were mailed a paper copy with a paid return postage envelope. Participants who did not complete the electronic or paper version were administered the survey via telephone if they agreed to participate in this manner. From an initial sample of 5,287 physical education teachers, a total of 2,423 consented to participate in this study (46% response). See Table 5.1 for participant characteristics.

Instrument

The survey was developed to assess the changes teachers made to their programs in the three years prior to taking the survey, to determine the primary initiator of past changes, and assess their likelihood of making future changes within the forthcoming 12 months. Changes to programming were divided into the following five program elements: (a) curriculum, (b) instructional strategies, (c) management strategies, (d) assessment, and (e) learning environment. The program elements were determined to be appropriate after examining the SHAPE America Appropriate Instructional Practice Guidelines (SHAPE, 2009) and Healthy Eaters, Lifelong Movers (HELM) Rubric for High Quality Physical Education (Belansky, Cutforth, Kern, & Scarboro, 2016). Each program element was further divided into seven subcategories commonly

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associated with each. For example the program element, curriculum, included the subcategories (a) whole/entire curriculum, (b) focus of curriculum, (c) unit of instruction, (d) daily lesson(s), (e) activities within lessons, (f) other curriculum changes, and (g) no curriculum changes. Table 5.2 includes the survey items for each program element and respective subcategories, along with results of participant responses.

The survey included a previously validated Teacher Change Questionnaire-Physical Education (TCQ-PE) that was designed to assess teachers' dispositions toward change in: (a) program satisfaction, (b) self-efficacy to change, and (c) willingness to change. The TCQ-PE underwent analysis to establish validity and reliability, and results showed that it successfully predicted teachers' likelihood to make future pedagogical changes to curriculum, instruction, class management, assessment, and learning environment (Kern & Graber, in review). In addition to survey items related to past pedagogical changes, teacher dispositions toward the change process, and likelihood to make future changes, participants were asked to answer demographic questions related to their gender, total non-consecutive years teaching, grade level of students they currently teach, and the subjects other than physical education they currently teach (if any).

Data Analysis

The data were initially examined and individuals who responded to less than 90% of the survey items were excluded list-wise from further analysis. From the total of 2,423 consented participants, 2,233 were retained (92% completion rate) for analysis. Data cleaning and descriptive statistics were calculated using SPSS version 24.0. Frequencies and percentage of total responses to questions regarding past pedagogical changes and the primary initiator of changes were calculated (Table 5.2 and Table 5.3).

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The survey items that comprised the TCQ-PE were analyzed through factor analysis and structural equation modeling as part of procedures to establish the TCQ-PE as a valid and reliable instrument to measure teachers' dispositions toward change and predict their likelihood to make future pedagogical changes. For a detailed description of the validation procedures, see Kern & Graber (in review).

Since the relationship between teachers' dispositions toward change and their likelihood to change (LtC) was substantiated by the TCQ-PE, it was appropriate to make analytic comparisons between groups of teachers based on LtC values. Composite scores of LtC values were calculated and cut points assigned in order to define high, moderate, and low LtC. Average values from the LtC survey items (mean values = 1-5) were used to establish cut points such that 1.0 to 2.49 = low LtC, 2.5 to 3.5 = moderate LtC, and 3.51 to 5.0 = high LtC. Based on the relationship established in the structural model, high LtC scores indicate that an individual is highly disposed to change, thus this category was termed *Change Disposed* (CD). Low LtC scores suggest the individual is not disposed to change, or *Not Change Disposed* (NCD). Individuals with moderate LtC scores are neither CD nor NCD, which was termed *Neutral*.

Descriptive statistics were calculated in each change disposition category (CD, Neutral, NCD) for individual and school demographic values, including gender, grade level taught, number of years teaching experience, teaching assignment, school locale, school teacher to student ratio, and the percentage of low income students attending each school. Comparisons between the proportions of the demographic subgroups (a) gender, (b) grade-level taught, (c) teaching assignment, and (d) school locale) for each of the three disposition categories (CD, Neutral, NCD) were made using cross-tabulation, with Chi-square test for independence (actual vs. expected count). Post hoc z-tests were performed to compare column (CD, Neutral, NCD)

proportions for each demographic subgroup. Acceptable statistical significance was set prior to analysis at $p < .05$, and effect sizes (Cramer's V) calculated. Comparison of means of the demographic subgroups (a) years of non-consecutive teaching (b) school % of low income (c) school student to teacher ratio was conducted using one-way analysis of variance (ANOVA), with Tukey's post hoc analysis of group differences. Acceptable statistical significance was set prior to analysis at $p < .05$, and effect sizes (partial η^2) calculated (Table 5.4).

In order examine how dispositions toward the change process relate to pedagogical changes teachers reported making in the past three years, individual mean scores for past changes in curriculum, instruction, management, assessment, and learning environment were calculated and compared using one-way repeated measures ANOVA. Tukey's post hoc analysis was conducted to determine between group differences ($p < .05$), and effect size was calculated and reported as partial η^2 (Table 5.5).

Results

The results related to pedagogical changes teachers made to the program elements (curriculum, instructional strategies, management strategies, assessments, and learning environment) showed that most reported making changes to their programs in the past three years, but some changes were made more frequently than others. The most frequently changed program element, as indicated by the percentage of teachers reporting making at least one change in that category, was curriculum (97.2%). The program element that was least often changed was assessment (84.8% reporting making at least one assessment change), followed by learning environment (86.5%), management strategies (87.4%), and instructional strategies (95.1%) (Table 5.2).

The most frequent curriculum changes indicated by teachers were the addition or subtraction of units of instruction (68%) and individual activities (54.9%); while the least changed aspect of curriculum was whole/entire curriculum (18.9%) and curricular focus (39.4%). The instructional strategies changes most often cited were those that increased student physical activity and enjoyment (63.6%), while the least cited were changes that provided for increased game play (32.9%) and individualization (42.6%). Teachers reported making changes to management strategies that increased student on-task behavior most frequently (59.2%), and changed roll call procedures to make students more physically active least frequently (24.1%). The most common change to assessments was adding or subtracting informal assessments (51.2%), and the least common change was district curriculum assessments (27.2%). The most frequent learning environment changes were those that promoted positive social interactions between students (57.8%), and the least frequently made learning environment changes were those that promoted cultural sensitivity (28.2%).

Primary Initiator of Change

The results showed that over the past three years, physical education teachers made self-initiated changes more often than externally initiated changes (83.1% vs. 16.9%). Teachers' indicating a change was made by "Me, alone," "Me and a fellow teacher(s)," or "Me and my principal" were collectively considered to be self-initiated changes. The responses, "Administration," "Professional Development Initiative," and "State Requirement," were considered to be externally initiated. Teacher self-initiated changes varied between program elements, with management strategies having the highest percentage (56.6%) of teachers indicating "Me, alone" as the primary initiator of change, and curriculum having the highest percentage (44.6%) of "Me and fellow teacher(s)" as the primary initiator. The subcategory of

self-initiated change that was least frequently indicated as a primary initiator of change across all program elements was "Me and my principal" (lowest = curriculum, 2.4%; highest = assessments, 3.9%). Table 5.3 includes all percentages of teachers' responses in each program element and category aggregates.

Externally initiated changes were highest for the program elements, curriculum (28.9%) and assessment (26.9%), and "professional development initiatives" was the most frequently indicated subcategory of externally initiated change across all program elements. "State requirement" was the least often cited source of externally initiated change, except in curriculum and assessments, where it was reported with a slightly greater frequency than "Administration" (curriculum = 8.8% State requirement vs. 7.1% Administration; assessment = 8.5% State requirement vs. 7.0% Administration). Table 5.3 shows a breakdown of the number and percentage of teachers indicating the primary initiator of change as self- and externally initiated, as well as the respective subcategories.

Categorical analysis of demographic subgroups revealed significant differences between members of the CD, Neutral, and NCD groups of participants. The CD group had a significantly greater proportion of female teachers than the Neutral and NCD group (χ^2[2, $N = 2233$] = 19.64, $p = .000, \Phi_{Cramer} = .151$). The Neutral group had a significantly greater proportion of high school teachers than both the CD group and NCD group (χ^2[4, $N = 2233$] = 14.82, $p = .022, \Phi_{Cramer} = .085$). The CD group had a significantly lower proportion of teachers who only taught physical education than the Neutral and the NCD group (χ^2[2, $N = 2233$] = 12.89, $p = .002, \Phi_{Cramer} = .123$). The CD group included a significantly higher proportion of teachers working in suburban schools than both the Neutral and NCD group, and the Neutral and NCD

had significantly greater proportions of teachers working in rural schools compared to the CD group ($\chi^2[4, N = 2233] = 16.06$, $p = .013$, $\Phi_{Cramer} = .091$).

The CD teachers had the lowest mean number of years teaching experience (15.4 years ± 9.6), with significantly greater mean years experience in the Neutral group (17.5 years ± 10.0) and in the NCD group (21.0 ± 10.7) (F[2, 2232] = 39.83, $p < .001$, $\eta^2 = .040$). No significant differences between groups were observed for the mean percentage of low income students attending school (F[2, 2232] = .904, $p = .405$, $\eta^2 = .001$), and mean student to teacher ratio of the school (F[2, 2232] = .702, $p = .496$, $\eta^2 = .001$).

In addition to differences in demographic make-up between the CD, Neutral, and NCD groups, results of ANOVA and post hoc analysis showed that teachers who are more or less disposed to change also differed in the extent to which they made changes in the past. In all program elements, CD teachers reported making significantly more past changes ($p < .01$, $\eta^2 = .046$ to .119) than Neutral and NCD teachers. Neutral teachers also reported significantly ($p < .01$) more past changes in every program element than NCD teachers. The effect size (η^2) of the group differences were greatest in the program element, learning environment ($\eta^2 = .119$), and lowest in curriculum ($\eta^2 = .046$). Table 5.5 includes the mean number of changes reported by CD, Neutral, and NCD teachers in each program element, and results of ANOVA and post hoc tests.

Discussion

This study focused on behaviors of physical education teachers related to the pedagogical changes they have made in the past, how those changes were initiated, and how internal dispositions are related to the change process. The results indicate that the majority of teachers make changes regularly to their programs, and that they themselves are most often the sole or co-

initiator of change. In addition, previous research suggests that teachers' internal dispositions toward change are predictive of future changes (Kern & Graber, in review), and data in this study indicates that these same dispositions reflect teachers' past behavior in making pedagogical changes.

While the majority of teachers reported making pedagogical changes to program elements (curriculum, instructional strategies, management strategies, assessments, and learning environment) in the past three years, the data in this study suggest that these changes are most often minor and may not have a great impact on overall program quality. For example, although curriculum was the most commonly changed program element, the type of curriculum changes most frequently made were adding or subtracting units or individual activities. Whole or entire curriculum and curricular focus were least often changed. Given the evidence in the physical education literature indicating that less than 25% of teachers utilize a written, standards-based curriculum (Lee et al., 2007), it would seem that large-scale curricular change, though warranted, is not commonly occurring. In addition, participants in the study indicated that assessment is the least changed program element overall, and the most frequent assessment changes were informal assessments. With reform advocates calling for a greater emphasis on student learning (IOM, 2013), assessment is critical, yet it seems to be lower priority for physical education teachers.

The results of this study also indicate that physical education teachers predominantly self-initiate change by themselves, or with a colleague, but not with their building principal. Overall self-initiated changes accounted for approximately 83% of past pedagogical changes made, supporting findings of recent research conducted with classroom teachers who made similar changes approximately 75% of the time (Maskit, 2013). Not surprisingly, teachers exercised the greatest autonomy in making changes to management strategies and learning environment (e.g.

primary initiator was "Me, alone), and the highest percentage of changes initiated by teachers with a colleague ("Me and fellow teacher[s]) were in curriculum and assessment. This finding would suggest that decisions to change curriculum and assessment may be made on a department level, but teachers' in-class practices are individually controlled. Furthermore, the results related to self-initiation showed low levels of principal involvement in making pedagogical changes; a result that supports prior research indicating that physical education programs severely lack principal support for instructional improvement (Lounsbery, McKenzie, Trost, & Smith, 2011; Whipp et al., 2007).

Externally initiated changes, though occurring less often than self-initiated changes, were most frequent in curriculum and assessment. Teachers in the current study selected the external initiators, "professional development initiative" and "state requirement" as the primary initiator of change with the greatest frequency in curriculum and assessment compared to all other program elements (See Table 5.3). This result would suggest that reform efforts might be reaching some physical education teachers, though it is not clear from the data the extent to which the changes affect program quality. Administration was the least cited external initiator of change, supporting the earlier finding of low principal involvement.

Comparisons of teachers' internal dispositions toward change were made by categorizing participants based on their likelihood to make future changes (i.e. CD = high likelihood to change, Neutral = moderate likelihood to change, and NCD = low likelihood to change). The results showed that the disposition categories (CD, Neutral, NCD) were comprised of different relative percentages of females and males, teachers with more or less years of teaching experience, and participants who teach only physical education versus those who teach multiple subjects.

The greater relative percentage of female teachers in the CD group and male teachers in the NCD group may mean that males and females experience change differently. Gender differences are apparent in teacher behavioral research related to teaching efficacy (Ross, Cousins, & Gadalla, 1996), and acceptance of technology (Yuen & Ma, 2002), thus it is not surprising that dispositions toward change are influenced by gender. Interestingly, fewer CD teachers teach only physical education, with that relative amount increasing in Neutral and NCD teachers, progressively. This result indicates that teaching only physical education, and no other subjects, is associated with a disposition less favorable to making pedagogical changes. While it is unclear from the scope of this study why this difference exists, it may be related to professional development and education reform efforts that most often target non-physical education content areas. It may also be that exposure to other content areas and different teachers throughout the school facilitates greater receptivity to change due to heightened awareness of overall school-based initiatives and classroom-based instructional strategies.

Teachers' internal dispositions toward change have been shown to be predictive of making future pedagogical changes (Kern & Graber, in review), and results of this study indicate that dispositions are also reflective of change. Results of ANOVA in the current study showed that CD teachers were not only significantly ($p < .01$) more likely to make future changes, but also made significantly more ($p < .01$) changes in the past in all program elements (Table 5.5). This result is somewhat surprising because the dispositions toward change, (a) program satisfaction, (b) self-efficacy to change, and (c) willingness to change could potentially change as a result of making pedagogical changes. For example, if an individual teacher experiences low program satisfaction and makes a subsequent change, it would stand to reason that his/her program satisfaction would increase following the change. In fact, the current study results

would suggest the opposite is true, and that CD teachers are more change-disposed than their Neutral or NCD counterparts at all times, including after making changes (e.g. once change-disposed, always change-disposed). This result also supports the notion that bottom up change is more sustainable than top down change, as the internal disposition to change may be enduring.

Three theoretical frameworks inform the identification of the teacher dispositions toward change that are highlighted in this study. Shaw et al.'s (1991) model of teacher change indicates program dissatisfaction is prerequisite to change, Bandura's (1986) *social cognitive theory* is the basis for the teacher disposition SEtC, and Roger's (1962) *Diffusion of Innovations* is the foundation for innovativeness or WtC that was measured as part of the TCQ-PE (Kern & Graber, in review) and was used to categorize teachers in the current study. The results of this study provide evidence for a multidimensional influence of each theoretical framework, and may indicate that neither theory individually explains teachers' likelihood to change. Additionally, since teachers who were highly disposed to change (CD) primarily made minor programming changes, perhaps other factors should be considered in an attempt to understand how large scale change occurs. The theoretical framework known as *teacher socialization* (Van Maanen & Schein, 1979)*, which explains how socializing agents (students, colleagues, administrators, and parents) influence teachers attitudes and beliefs may provide additional insight.

What Does This Article Add?

This study adds to the body of knowledge in physical education research by providing a unique perspective of current physical education teachers' viewpoints and behaviors related to making changes to their programs. Regarding physical education reform, the current study results indicate that many physical education teachers are internally driven to make changes to improve programming, but may lack the external support and perhaps, the nudge to attempt

large-scale changes that would likely have greater impact on program quality. This finding would suggest that a most advantageous approach to reform might be to design initiatives that nurture bottom-up change with top-down assistance, particularly in the areas of curriculum and assessment. In addition, this study shows that knowing teachers' internal dispositions toward change is critical to designing successful professional development, as dispositions may remain unchanged regardless of past changes made. Future research should explore factors related to promoting large-scale changes in more and less change disposed physical education teachers.

Tables

Table 5.1

Participant characteristics by SHAPE America regional district and US state sampled

	Total $N = 2{,}233$	Northwest district Washington ($n = 369$)	Southwest district Utah ($n = 173$)	Central district Minnesota ($n = 476$)	Southern district Virginia ($n = 475$)	Midwest district Illinois ($n = 654$)	Eastern district Delaware ($n = 86$)
Teacher demographics							
Male	1,112	176	73	240	236	342	45
Female	1,121	192	101	236	239	312	41
Mean yrs. teaching (SD)	16.8 (10.1)	18.3 (10.5)	13.2 (10.5)	18.5 (9.8)	18.2 (10.3)	15.4 (9.4)	16.9 (10.1)
Licensed in PE	2,144	337	128	473	472	650	84
Not licensed in PE	89	32	45	3	3	4	2
PE only	1,305	238	99	270	283	387	55
PE + 1 or more subjects	928	131	74	206	192	267	31
School demographics							
% low-income	43.2%	46.8%	58.2%	37.9%	42.2%	40.8%	55.8%
Student-teacher ratio	17.2:1	20.0:1	22.4:1	17.3:1	16.1:1	15.0:1	13.0:1
Urban	397	107	31	87	80	89	3
Suburban	1028	157	98	149	205	382	37
Township	294	40	21	101	44	68	20
Rural	514	65	23	139	146	115	26

Note: **Licensed in PE** = currently holds a valid physical education teaching license

Not licensed in PE = does not hold a current valid physical education teaching license

PE only = number of teachers whom physical education is the only subject they are assigned to teach

PE + 1 or more subjects = number of teachers whom are assigned to teach physical education and at least one other school subject, including health

% Low income = number of students receiving free or reduced lunch prices ÷ number of enrolled students

Student:teacher ratio = number of students ÷ number of teachers per school

Table 5.2

Frequencies and percent of total responses to survey questions related to past pedagogical changes (N = 2,233)

In the past 3 years what changes have you made to your curriculum? Check all that apply	*n*	% of total responses
I changed to a whole different curriculum	421	18.9
I changed the focus of my curriculum	879	39.4
I added or subtracted one or more units of instruction	1519	68.0
I added or subtracted one or more daily lessons	1041	46.6
I added or subtracted some activities for the current lessons I teach	1228	54.9
I made other curriculum changes	254	11.4
I made no curriculum changes	61	2.8
In the past 3 years what changes have you made to the instructional strategies you use to teach? Check all that apply		
I changed my instruction to increase the time students are physically active during class	1414	63.6
I changed my instruction to improve student learning of skills during class	1202	53.8
I changed my instruction to individualize activities during class	952	42.6
I changed my instruction to increase student enjoyment during class	1266	56.7
I changed my instruction to allow for more game play	737	32.9
I made other instructional strategy changes	144	6.5
I made no instructional strategy changes	110	4.9
In the past 3 years what changes have you made to the class management strategies you use in your classes? Check all that apply		
I changed how I take roll call to make it more active for students	545	24.1
I changed management strategies to decrease down time between activities	1203	53.4
I changed management strategies to reduce time getting out and putting away equipment	841	37.6
I changed management strategies to increase student on-task behavior	1323	59.2
I changed procedures for student personal needs (bathroom, shoes, water, locker)	730	32.7
I made other class management changes	106	4.8
I made no class management changes	281	12.6
In the past 3 years what changes have you made to the assessments you use in your classes? Check all that apply		
I added or subtracted one or more standardized tests	797	35.7
I added or subtracted one or more new district curriculum assessments	608	27.2
I added, subtracted, or changed one or more standards-based assessments	726	32.5
I added, subtracted, or changed the unit tests I use	872	39.1
I added, subtracted, or changed one or more informal assessments	1142	51.2
I made other assessment changes	106	5.8
I made no assessment changes	339	15.2
In the past 3 years what changes have you made to the learning environment in your classes? Check all that apply		
I made changes to promote inclusion of all students in PE class	1095	49.0
I made changes to ensure student physical safety	1115	49.9
I made changes to promote positive social interaction between students	1292	57.8
I made changes to promote cultural sensitivity	630	28.2
I made changes to improve my relationship with my students	1062	47.6
I made other changes to the learning environment in my classes	94	4.2
I made no changes to the learning environment in my classes	302	13.5

Note: n represents the number of responses to each question; % of total responses is calculated as n / the total number of participants who completed the survey (*N* = 2,233)

Table 5.3

Teachers indication of the primary initiator of pedagogical changes made in the past 3 years

Program element	Self-initiated changes			Externally-initiated changes		
	Me, alone	Me and fellow teacher(s)	Me and my principal	Administration	Professional development initiative	State requirement
Curriculum	524 (24.1%)	969 (44.6%)	51 (2.4%)	155 (7.1%)	283 (13.0%)	190 (8.8%)
Instructional strategies	810 (38.2%)	912 (43.0%)	82 (3.9%)	61 (2.9%)	243 (11.5%)	15 (0.7%)
Management strategies	1102 (56.6%)	676 (34.7%)	59 (3.0%)	26 (1.3%)	79 (4.1%)	4 (0.2%)
Assessments	482 (25.5%)	828 (43.7%)	74 (3.9%)	133 (7.0%)	216 (11.4%)	161 (8.5%)
Learning environment	992 (51.4%)	725 (37.5%)	59 (3.0%)	52 (2.7%)	97 (5.0)%	6 (0.3%)
Colum average	39.2%	40.7%	3.24%	4.21%	8.99%	3.69%
Total		83.1%			16.9%	

Note: Numerical values = the number of teachers indicating the primary initiator of changes they made in the past 3 years per each category; percentage values in parentheses = the % of teachers out of the total who reported making at least one change per program element.

Table 5.4

Comparison of demographic groups relative to teacher disposition toward change categories

	CD (N = 1059)	Neutral (N = 869)	NCD (N = 305)	χ^2	p	Φ_{Cramer}
Gender	*n* (column %)	*n* (column %)	*n* (column %)			
Male	476 (44.9%)a	477 (54.9%)b	159 (52.1%)c	19.64	.000	.151
Female	583 (55.1%)a	392 (45.1%)b	146 (47.9%)c			
Grade level taught						
Elementary (K-5)	332 (31.4%)a	270 (31.1%)a	117 (38.4%)a	14.82	.022	.085
Middle (6-8)	251 (23.7%)a	176 (20.3%)a	55 (18.0%)a			
High (9-12)	222 (21.0%)a	223 (25.7%)b	61 (20.0%)c			
Multi-level	254 (24.0%)a	200 (23.0%)a	72 (23.6%)a			
Teaching assignment						
Phys. Ed. only	580 (54.8%)a	527 (60.6%)b	198 (64.9%)b	12.89	.002	.123
Phys. Ed. + 1 or more subjects	479 (45.2%)a	342 (39.4%)b	107 (35.1%)b			
Locale						
Urban	171 (16.1%)a	169 (19.4%)a	57 (18.7%)a	16.06	.013	.091
Suburban	523 (49.4%)a	367 (42.2%)b	138 (45.2%)c			
Township	149 (14.1%)a	110 (12.7%)a	35 (11.5%)a			
Rural	216 (20.4%)a	75 (25.7%)b	75 (24.6%)c			
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	F	p	η^2
Years teaching	15.4 (9.6)a	17.5 (10.0)b	21.0 (10.7)c	39.82	.000	.040
% Low income	43.3 (26.1)a	42.8 (25.9)a	44.9 (26.4)a	.904	.405	.001
Student to teacher ratio	17.2 (4.6)a	17.0 (4.1)a	17.4 (4.3)a	.702	.496	.001

Note. Φ_{Cramer} = Cramer's V effect size calculation for strength of association between multiple categorical variables; η^2 = partial eta-squared effect size calculation for group mean differences.

Subscript letters (a,b,c) denote differences in column percentages such that when subscript letters are the same, no significant difference exists at p = .05 level and when subscript letters are different, significant differences exist at p = .05 level.

Table 5.5

Differences between change disposed (CD), neutral, and not change disposed (NCD) teachers in past pedagogical changes.

Program element	CD (*n* = 1059)		Neutral (*n* = 869)		NCD (*n* = 305)		*F*	*p*	*partial* η^2
	M	SD	M	SD	M	SD			
Curriculum	2.67	1.39	2.24	1.23	1.88	1.19	52.2	.000	.046
Instructional strategies	2.92	1.42	2.31	1.30	1.96	1.39	76.8	.000	.066
Management strategies	2.48	1.35	1.89	1.29	1.43	1.30	89.4	.000	.076
Assessments	2.35	1.41	1.64	1.22	1.20	1.21	116.7	.000	.097
Learning environment	2.90	1.61	2.01	1.47	1.36	1.40	147.8	.000	.119

Note: M = mean number of changes indicated per program element; SD = standard deviation Effect sizes (η^2) represent the overall difference among CD, Neutral, and NCD per program element.

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Chapter Six: Article Three

Abstract

Physical education teachers have been criticized for relying on traditional practices instead of promoting knowledge and skills for lifetime participation in physical activity. **Purpose:** The purpose of this study was to investigate barriers to and facilitators of pedagogical change and teacher perceptions of the contextual factors and socializing agents that enhance or inhibit change. **Methods:** Thirty-two teachers completed a survey of personal dispositions toward change and participated in in-depth interviews. **Results:** Teachers perceived that students' response to instructional methods and scheduling (days per week) of physical education class, as well as interactions with teaching colleagues and administrators influenced their ability to make pedagogical changes. Teachers with limited student contact time reported scheduling as a barrier to change, while daily student contact was a facilitator. Change-disposed teachers were more likely to promote student learning and assume leadership roles. **Discussion:** Reform efforts should include consideration of teacher dispositions and student contact time.

Keywords: student contact time, barriers, facilitators, dispositions

Introduction

It is recommended that children participate in moderate to vigorous physical activity (MVPA) for at least 60 minutes daily in order to optimize health and prevent overweight and obesity (Centers for Disease Control and Prevention [CDC], 2013). Schools are considered ideal venues for teaching children the knowledge and skills necessary for lifelong participation in physical activity because of the amount of time students spend in school and the influence teachers have on child development (CDC, 2011). Recent public health recommendations call for a greater focus on lifetime physical activity promotion in school physical education classes, and physical education teachers are encouraged to implement pedagogical practices that allow students to learn knowledge and skills for lifetime participation in physical activity (American Heart Association (AHA), 2012; CDC, 2011).

Research regarding physical education teachers' pedagogical practices has revealed that some physical education classes are lacking instruction aligned with public health recommendations. For example, Placek (1983) described physical education classes as places where student learning of knowledge and skills took a backseat to keeping students "busy, happy, good" (p. 46). Accounts of inappropriate teaching practices, such as requiring students to wait in long lines to use a single piece of equipment (Williams, 1996), playing elimination games, and activities without a clear learning objective (Kretchmar, 2006; Williams, 1994), are further examples of instructional practices that do not facilitate the health enhancing benefits of physical education class that could otherwise be promoted with a different instructional approach.

A national study showed that 68.1% of teachers in required physical education classes still taught *dodgeball* or *bombardment* and 55% taught *king of the hill* or *steal the flag* (Lee,

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Burgeson, Fulton, & Spain, 2007). These activities result in physical education classes with low overall levels of MVPA and little educational value, thus leading advocates and researchers in physical education pedagogy to call for reform (McKenzie & Lounsbery, 2014; Silverman, 1991). Experts in the fields of public health and physical education recommend that physical education teachers change their traditional teaching practices to ones that focus on student learning in highly active classroom environments (McKenzie & Lounsbery, 2009, 2014; Metzler, McKenzie, van der Mars, Barrett-Williams, & Ellis, 2013).

Although little research has been conducted specifically on the topic of physical education teacher change, research based theory describes the underlying factors related to teachers' ability and desire to attempt pedagogical change. Teacher socialization theory describes how teachers' attitudes and beliefs toward teaching develop through their individual experiences as both a student and a teacher (Danziger, 1971; Lawson, 1983; Van Maanen & Schein, 1979). While working as professionals, physical education teachers are influenced by socializing agents; namely administrators, fellow teachers, and students. Because of their ability to influence teachers (Richards, Templin, & Graber, 2014), socializing agents may also influence teachers' ability to make pedagogical change.

Education experts point to students as being particularly influential socializing agents (Fullan, 2007) due to the extended amount of time teachers and students spend together (McLaughlin & Talbert, 1993). Students influence teachers' instruction by reacting favorably or unfavorably to curricular and instructional approaches (Bas, 2011; Enochs, Scharmann, & Riggs, 1995; Hoy, 1967; Klein, 1971; McLaughlin & Talbert, 1993). Research conducted with physical education teachers has shown that student reaction to instructional methods and activities can result in lowered expectations of student learning by teachers (Smyth, 1995; Solmon, Worthy, &

Carter, 1993). Conversely, student reaction to teachers' instructional practices can reinforce teaching methods due to increased student learning (Bechtel & O'Sullivan, 2007: Cothran, 2001; Guskey, 2002; Richardson, 1994, 1998; Smyth, 1995).

Teachers and administrators within each school are also socializing agents within a collective school context that can influence teacher behavior through a process known as organizational socialization (Van Maanen & Schein, 1979). Socialization in the workplace influences teacher behavior (Day & Gu, 2010; Feiman-Nemser & Floden, 1984) and may influence teacher change. Teachers respond to organizational socialization with either a custodial or an innovative orientation (Van Maanen & Schein, 1979). A custodial orientation is evidenced when an individual teacher adopts a caretaker stance toward their organizational role and accepts the status quo, while those teachers who reject the status quo and seek change are considered to have adopted an innovative orientation (Stroot & Ko, 2006; Van Maanen & Schein, 1979). Studies conducted in physical education most commonly report that teachers assume a custodial orientation in new positions (Smyth, 1995; Stroot & Ko, 2006; Williams & Williamson, 1998). Teacher socialization theory suggests that over time, the influence of socializing agents such as students, fellow teachers, and administrators, shapes teachers' attitudes and beliefs (Lawson, 1983; Templin, 1981; Van Maanen & Schein, 1979), which in turn influences the change process.

Teachers' attitudes and beliefs are also influence by their dispositions toward teaching, (Diez, 2007). Dispositions are the tendencies of teachers to think and behave in particular ways (Katz & Raths, 1985; Wasicsko, 2007). They represent teachers' knowledge, attitudes, and beliefs about education (Murrell, Diez, Feiman-Nemser, & Schussler, 2010). Relative to the process of change, dispositions include how teachers perceive the necessity of change along with

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their own ability to successfully implement change (Vannatta & Fordham, 2004). According to research, three teacher dispositions: (a) dissatisfaction with current programming/practice, (b) self-efficacy to change, and (c) willingness to change are important prerequisites to change, and teachers possess varying degrees of each (Steinhoff, 2007).

Teachers can become dissatisfied with their current practices or curriculum, which may lead them to attempt pedagogical change. Shaw, Davis, and McCarty (1991) referred to this dissatisfaction as *perturbation*. Shaw et al. (1991) contend that all pedagogical change begins with perturbation, which in turn, is a catalyst for change. The self-efficacy, or confidence to change is a disposition that is needed in some capacity in order for pedagogical change to occur (Bandura, 1995); and while it is most commonly studied in relation to general education (Goddard, Hoy, & Hoy, 2000; Tschannen-Moran, Hoy, & Hoy, 1998), self-efficacy has been shown to be important to successful teacher change (Evers, Brouwers, & Tomic, 2002). Finally, teachers must be willing to change. Researchers in the field of psychology use the term *innovativeness* to describe the degree to which an individual is willing to change (Hurt, Joseph, & Cook, 1977; Goldsmith, 1986; Jackson, 1976; Kirton, 1976; Leavitt & Walton, 1975). Studies in general education and physical education have shown that willingness to change is positively related to (Kern & Graber, in review; Rovegno & Bandhauer, 1997) and predictive of teacher change (Cassata, Kim, & Century, 2015; Kern & Graber, in review; Van Braak, 2001).

Teacher change is an important, but understudied topic, and understanding how teachers change has implications for educational quality. Little, however, is known about the change process among physical education teachers, including barriers to and facilitators of change. Therefore, the purpose of this study was to investigate the nature of the internal and external factors that support or inhibit physical education teachers in making pedagogical change.

Grounded in teacher socialization theory, the following research questions guided the study: (a) What do physical education teachers perceive as barriers to and facilitators of making pedagogical change? (b) How do contextual factors and socializing agents such as students, colleagues, and administrators enhance or inhibit the change process? (c) How are dispositions about the change process related to the pedagogical changes physical education teachers initiate and attempt to implement?

Methods

This study was part of a larger investigation in which 2,423 physical education teachers from a random sample of 5,287 responded to a survey to determine their dispositions toward making pedagogical changes to their programs. All methodological procedures were approved by the Institutional Review Board, and those who participated in all phases of the study received a $25 gift card as an incentive.

Participants

Thirty-two physical education teachers from six US states (Delaware, Illinois, Minnesota, Utah, Virginia, and Washington), representing all districts within the Society of Health and Physical Educators (SHAPE America), participated in this study. Among the participants, 17 were female, and collectively the group had an average of 15.5 years of teaching experience (SD = 10.4 years). Participants taught physical education at multiple grade levels, with 12 teaching in elementary schools (grade K-5), 10 in middle schools (grade 6-8), 6 in high schools (grade 9-12), and 4 serving multiple grade levels. The teachers were recruited after completing the Teacher Change Questionnaire Physical Education (TCQ-PE) (Kern & Graber, in review). Those who also indicated an interest in being interviewed (69% of the surveyed respondents [$n = 1,679$)]) were grouped and categorized based on their survey results.

The TCQ-PE was used to categorize teachers as change-disposed (CD) or not change-disposed (NCD), and participants in each category were randomly selected and contacted for interviews. The CD teachers scored on the high end of the TCQ-PE while the NCD teachers' scored on the low end. Of the respondents who completed the survey *and* indicated a willingness to be interviewed, 47.4% ($n = 796$) were categorized as CD and 13.7% ($n = 230$) were categorized as NCD. A third group of teachers scored in the middle of the continuum and comprised 38.9% ($n = 653$) of the participants. This group was not included in this study because the researchers' intent was to compare teachers' with contrasting internal dispositions toward the change process. Initial invitations to interview were sent to 20 CD teachers and 20 NCD teachers, of which, 18 CD teachers responded and those interviews were completed. The initial invitations to interview NCD teachers yielded only 2 participants, thus additional invitations were sent. A total of 140 interview invites were sent to NCD teachers, yielding 14 completed interviews. Whether the difference between the CD and NCD teachers who accepted the initial interview invitation is reflective of other behaviors associated with change was not examined in this study, it was noted as an interesting phenomenon. In total, 18 CD teachers and 14 NCD teachers completed the TCQ-PE and an in-depth interview. Table 6.1 includes a comparison of the demographics of the CD and NCD teachers who participated in the study.

Measures

Participants completed the 15-item Teacher Change Questionnaire-Physical Education (TCQ-PE), which is a valid and reliable instrument designed to assess teacher dispositions toward pedagogical change, and their self-reported likelihood to make future change (Kern & Graber, in review). The dispositions measured in the TCQ-PE are: (a) program satisfaction (PS), (b) self-efficacy to change (SEtC), and (c) willingness to change (WtC). Factor analysis and

structural equation modeling of the TCQ-PE showed that low PS, combined with high SEtC and WtC resulted in high likelihood to make pedagogical changes (LtC) in the future (Kern & Graber, in review). The analysis showed that the converse was also true (e.g. high PS + low SEtC + low WtC = low LtC). Therefore, the TCQ-PE was considered accurate for categorizing participants' degree of change disposition. Average values from the LtC survey items (mean values = 1-5) were used to establish cut points such that 3.51 to 5.0 = high LtC and 1.0 to 2.49 = low LtC. High LtC scores indicated that an individual was highly disposed to change (CD), and low LtC scores indicated the individual was not highly disposed to change (NCD). Participants with LtC scores of 2.5 to 3.5 were considered to be neutral with regard to change disposition; this group of teachers was not included in the current study because the researchers sought to make comparisons between teachers with high and low dispositions toward change.

In addition to completing the TCQ-PE, CD and NCD participants were interviewed regarding their perceptions of barriers to and facilitators of pedagogical change. For consistency and reliability, a single researcher conducted all interviews. A semi-structured interview guide (Patton, 2015) with open-ended questions was used to deeply investigate the external factors that influence teachers' perceived ability to attempt and implement pedagogical change. Grounded in teacher socialization theory, specific questions were asked in relation to the influence of the following organizational socializing agents: (a) students, (b) teaching colleagues, and (c) principal(s) and other administrators. The interview questions focused on teachers' perceptions of the degree to which socializing agents influenced their ability to make curricular and instructional change. In addition, participants were asked about their disposition toward change and other aspects of their workplace environment that made pedagogical change easier or more difficult. All interviews were audio recorded and later transcribed.

Analysis

Analysis of the TCQ-PE is described in another article (Kern & Graber, in progress). In order to inductively establish grounded theory regarding factors that promote or inhibit teachers' ability to attempt and implement pedagogical change, interview data were initially analyzed using constant comparison methodology (Glaser & Strauss, 1967) and subsequently from a deductive perspective in relation to teacher socialization theory. Specifically, analysis was conducted using NVivo software (QSR International). Data were initially assigned open codes, and axial codes were later developed to reflect emerging themes (Strauss & Corbin, 1998). Themes were analyzed using the NVivo *matrix coding* function. Matrix columns were defined by participants' membership in either the CD or NCD categories. Rows in the matrices consisted of axial codes that were defined during content analysis. Thematic comparisons were made between CD and NCD teachers relative to the influence of socializing agents and contextual factors. When thematic discrepancies were discovered, researchers re-examined the raw data to ensure participant responses were accurately interpreted.

Credibility and trustworthiness. To ensure the credibility and trustworthiness of data, peer debriefing sessions were conducted between the lead researcher and the coauthor who is an expert in the field of physical education pedagogy/qualitative research and two physical education pedagogy doctoral students who each had three or more years of teaching experience. The results were also checked for negative cases, or cases that fell outside of the developing theory. Adjustments were made to account for all participant responses. Additionally, member checking was conducted during and following each interview by summarizing participant responses verbally and in writing for their approval and/or clarification, if needed (Lincoln & Guba, 1985).

Dependability and confirmability. To promote dependability and confirmability of the researchers' interpretations, interview data were triangulated with results from the TCQ-PE. Data from the TCQ-PE were used to confirm participants' responses regarding their dispositions toward change and their future intentions to make pedagogical change. No discrepancies between any individual participants' survey data and interview data were detected, thereby increasing confidence in the validity and reliability of both data sources. In addition, the lead researcher maintained an investigator log throughout the data collection and analysis period (Lincoln & Guba, 1985).

Results

Students, teaching colleagues, and administrators were socializing agents that influenced participants' attempts at pedagogical change, and differences were evident between the CD and NCD groups. The results also suggest that the contextual factor, contact time with students, serves as both a barrier to and facilitator of change. The following primary themes emerged: (a) students are powerful socializing agent in relation to change, (b) teaching colleagues facilitate or inhibit change, (c) principals provide only passive support of change, and (d) adequate student contact time is a facilitator of change. Table 6.2 includes pseudonyms for individual participants along with information about their gender, years of teaching experience, and disposition toward change.

Students are Powerful Socializing Agents in Relation to Change

Teachers gauged the relative success or failure of change based on their personal perceptions of whether or not the change improved student engagement in activities, student enjoyment while participating in activities, and student learning of knowledge and skills. There were similarities and differences between the CD and NCD teachers in that both CD and NCD

teachers prioritized making changes to improve student engagement relatively equally, but CD teachers placed more emphasis on changes they perceived increased student learning, while NCD teachers more strongly emphasized changes that promoted student enjoyment.

Student engagement is a priority. Student engagement was a major factor in relation to determining if change was successful for both CD and NCD teachers. When asked, "What are you seeing from students that tells you that changes are working well?" One participant said, "They (students) get fully involved. They are energetic about how to do things. They'll ask questions. They'll be excited" (Kaden, CD teacher). Teachers from the CD group emphasized that they changed their selection of activities based on how successfully they believed the change improved student engagement. One CD teacher said, "I just like trying new games to keep kids engaged. For example, I just recently added a modified kickball game that more kids can play without striking-out and sitting and waiting" (Roger, CD teacher). Teachers in the NCD group were also concerned about student engagement in activities, but the focus of their change was based more on student enjoyment than learning as highlighted in the sub-themes below.

Student enjoyment is more important to less change-disposed teachers. The degree to which students enjoyed new curriculum or instruction was an important factor in determining whether or not change was perceived by teachers as successful. While all teachers in the study mentioned that they considered student enjoyment an important consideration when making changes, teachers in the NCD group seemed to prioritize student enjoyment more. One NCD teacher went so far as to emphasize that change in her program was based entirely on maximizing student enjoyment.

My goal for the whole program is just to make it fun. When I change things, it's because I don't want it (physical education class) to be a grind for them (students). I want them to enjoy themselves and love coming to my class. (Nancy, NCD teacher)

Another teacher's belief was reflective of many in the NCD group when he stated, "If I do try something different, and I can see it isn't fun for them (students), I just quit trying…they can make it hard on you if they (students) don't like what you are doing, you know" (Cal, NCD teacher).

Change disposed (CD) teachers recognized the importance of student enjoyment, but did not give it as much value as teachers in the NCD group. One CD group teacher noted that, "The 'fun factor' of class is important because you want them (students) to enjoy your class, but it's (student enjoyment) not the most important thing" (Greg, CD teacher). When making change, the CD teachers tended to consider student enjoyment as only a secondary indicator of the success of the change. For example, one CD group teacher said:

My job is to teach, so when I make changes, I usually don't think first about whether they are liking it more. I'm more thinking about, "Are they more actively participating?" It's definitely a plus if they like it more, but it's not the first thing I think of. (Victoria, CD teacher)

Student learning is a priority to more change-disposed teachers. Compared to student engagement and enjoyment, all participants spoke less often about student learning in relation to change, however, the CD teachers expressed a greater concern for student learning than their NCD counterparts. The teachers in the CD group frequently reported making changes specifically with the intent to improve student learning on topics such as personal fitness and

sport skills, and emphasized that they considered their changes successful when they perceived students to be learning more. For example:

> I started using heart rate monitors because I want them to learn how to get fit, and after using them (heart rate monitors) for several weeks, I noticed that they (students) were like, working harder to get in their target heart rate zone…that tells me they learned how to do it…like how to get fit. (Lee, CD teacher)

Another teacher in the CD group stated that his primary focus was on modifying the challenge level of activities in order to maximize student learning. His statement is representative of teachers in the CD group.

> In one of the floor hockey stations, I noticed there was a lot of them (students) struggling to dribble the puck, so I shortened the dribbling part of the station so they could work more on shooting, which was what I wanted them to learn. That way even though they're not getting as much dribbling, they would get more practice shooting. If they're not successful, they're not going to be learning what they need to learn. We have to make sure they're learning the material. (Larry, CD teacher)

In contrast with the CD group, NCD teachers tended to devalue the importance of student learning in favor of student enjoyment. For example David (NCD) said, "I'm not worried about if they can make a right-handed layup. I don't grade on skills at all. I grade on being in class, participation, and attitude. I make things as fun as possible so everyone wants to participate." Mark (NCD) also considered student learning to be secondary compared with student enjoyment:

> I play dodgeball in my classes because kids like it. They don't like learning how to dribble a soccer ball, and besides, they can just figure it out when we play soccer, so why spend all that time learning exactly how to kick a ball just right?

Teaching Colleagues Facilitate or Inhibit Change

Regardless of whether teachers were more or less disposed to change, they regarded their teaching colleagues as having a strong influence on their ability to make changes to their programs. Statements from the participants suggest that fellow teachers may act as both barriers to and facilitators of change, depending on the extent to which they perceive their colleagues as supportive. For example, one teacher stated:

> We have four or five teachers in the building who are all about making it the best physical education program possible and want to evolve. Then there are a couple who just go with the flow, and another two that just make everything hard…they never want to change anything. (Lee, CD teacher)

Brittany (CD) expressed frustration with her colleagues regarding changes she wanted to make. "…like when we wanted to change to boy/girl PE (co-ed classes), I thought we were all on the same page, but then they (colleagues) didn't like the idea and we didn't do it…it's so frustrating now." In contrast, Haley (NCD) found collegial support critical to change in saying, "We collaborate together, and talk about the lessons we want to do. When we changed curriculum, we couldn't have made it work without working together."

When asked what it meant to have the support of fellow teachers, most teachers considered being like-minded with their colleagues as synonymous with support. For example, Larry (CD) referenced two colleagues he considered to be supportive of change by stating, "We get along well because we're on the same page. When I want to change something, I already know they will be on board." Stephanie (NCD) added:

> It's really important to be on the same page. One of them (teaching colleague) is doing the same things as me, and we work together well. The other one (teaching colleague)

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doesn't want to do anything we're doing; he uses this . . . stuff (curriculum) that we don't like.

With the exception of teachers who were the only physical educator in their building, nearly all of the teachers interviewed referred to their physical education teaching colleagues as generally either facilitators of or barriers to change. Some teachers in the CD group, however, also assumed a leadership role in the change process, and often considered their colleagues to be subsidiaries of their own individual efforts to change. One teacher who was instrumental in acquiring a Carol M. White Physical Education Program (PEP) grant for her school illustrates an example of this.

> We took on some big changes after getting the PEP grant, and I worked really hard to get everyone on the same page, and most of them have stepped up, but one who I just call "coach" is just stuck in his ways and won't change. (Mara, CD teacher)

Erin (CD) facilitated a department change in curriculum, and commented on the support she received from colleagues. "I got the ball rolling and we created it (new curriculum) together, so everyone had buy-in. That made it easier for them (colleagues) to get behind it. It was better than me just telling them what to do."

In contrast, those in the NCD group considered their teaching colleagues as barriers to change based on individuals who made change for no specific purpose or for reasons they did not understand or agree with. For example, David (NCD) stated, "Of course I want what's best for students, but changing things for the sake of changing doesn't make sense. Sometimes I think they (teaching colleagues) just like doing different things." Cal (NCD) stated, "I will change parts of my program if I can see why we need it. Our department head wanted us to use new

grading methods, and I said, 'why are we doing this?' What we have works just fine." Dorothy (NCD) added:

> I like what I teach, and he (department head) wanted us (Dorothy and a like-minded colleague) to change to this new curriculum, but I don't think it works and kids don't like it, so we're not really doing it. I think he's upset with us.

Principals Provide Only Passive Support of Change

Teachers' perceptions of administrator support for change was primarily in reference to their building principal. Most participants considered their building principal as generally supportive. For example, Kory (CD) said:

> My principal is awesome. She is really supportive of everything I do, including any changes I make. She mostly says, 'Unless you have issues, just do what you think is best for the kids, and if you have questions or need anything, just send me an email.' She's been really supportive that way.

For most teachers, however, principal support for change was perceived as hands-off, and their concerns related to change were typically in reference to safety and in-class student behavior. For example, Lionel (CD) stated, "I think he (principal) is very supportive of the changes we want to make, as long as kids aren't getting hurt and everyone is participating in class." Jarod (NCD) stated, "…yeah, I'm very supported in all the things that I do. Administration loves me because maybe (only) one or two times a year, I send someone to the office for a discipline problem."

Although both CD and NCD teachers perceived their principals as providing passive support, differences were apparent between the groups relative to how they approached change. For example, teachers in the CD group viewed low principal involvement as a license to make

nearly any change desired. For example, Brittany (CD) stated, "I can pretty much do what I want. He (principal) doesn't really know what I'm teaching, so when I change things, I don't think he really even knows. Lee (CD) added, "Our principal is very supportive, but it is kind of superficial. She only sees me teach occasionally, and I'm sure she doesn't know what I am trying to get done. I can literally change anything if I want to."

Teachers in the NCD group perceived principal support in a similar manner, however, these individuals likely require *active* principal support and the expectation that they will change in order to remain innovative teachers who implement best practices.

> He (principal) rarely comes to the gym. I know he's said a couple times to me that he's really happy with me as a teacher. I'm not sure he would care if I changed things; I think he just trusts me to do the job how I see fit. (Stephanie, NCD teacher)

Another teacher in the NCD group commented, "I don't think she notices much because she thought I was still using pedometers, and I haven't used them in about 3 years." (Cecelia, NCD) Cal (NCD) added, he (principal) is very supportive and trusting that I'll be professional. It would be nice if he would help me more, but I know he's busy."

Adequate Student Contact Time is a Facilitator of Change

Although little variation existed between CD and NCD teachers regarding their perceptions about the importance of contact time in physical education, contact time was strongly associated with their perceived ability to make change, particularly in relation to assessment. For example, Cecilia (CD) said, "I only see them once per week, so I can't really add any assessments, even though I would like to." In addition, Tracy said, "We don't want to take the time to have our kids take tests. It would be different if we saw them more than twice per week." The teachers in the NCD group voiced similar concerns.

I use a lot of just simple checklists, and that helps. I would do more assessment…there

are several things I might change, it's just that I only get my kids in class twice a week,

so I can't really add the tests that I want to add, there's just no time. (Misty, NCD

teacher)

While limited student contact time was a barrier to change, teachers in both the CD and

NCD groups who had daily contact with the same students reported that the weekly schedule was

a facilitator of change that included adding student assessments. Stan (NCD group) stated that,

"teaching in a school that has daily PE for kids makes it much easier…we have gradually

improved how we use assessments, and we couldn't have done that without having daily PE."

The teachers in the CD group had similar comments. For example, Lee (CD group) stated, "In

our school, kids have physical education for 30 minutes every day, so we can take the time to do

unit tests and skill tests without having to worry about taking away from activity time." Kaden

stated, "When we (Kaden and department colleagues) went to daily PE, it made all the

difference. We don't feel so pressured to just always be super active. We'll take time to do

quizzes and journaling now."

Some participants also expressed opinions regarding limited student contact time and

their ability to make changes that would potentially result in greater student learning. For

example Dorothy (NCD) stated:

I have always wanted to spend more time working on skills, but I see them (students)

once per week, and if I have three weeks to teach a throwing unit…and they still haven't

got it by the fourth week, well, I need to move on in order to get to all the standards.

Kory (CD) added, "I do what I can to get them to learn the basics, but I don't know how to do a

good job of that when I only get them for two 30-minute classes each week." Haley (NCD) said,

How much can you really teach in one day a week with first graders? If I do a 4-week

unit, that's only four lessons. I can't just decide to change and spend more time on

learning more in-depth stuff, there won't be time for everything else.

Student contact time was also a factor in teachers' perceived ability to execute a quality

curriculum. Several teachers from both CD and NCD groups expressed a deep frustration about

their programs due to inadequate time with students. For example, Kory (CD) stated, "…Only

having PE twice per week, they're really not getting the activity they need…It's disheartening."

Larry (CD) commented, "There is no way I can get through our curriculum in two days a week

PE. I'm lucky if they get just a little of it (curriculum)." David (NCD) noted that his curriculum

is now less encompassing following a district reduction in student contact time from daily

physical education to twice per week classes. "I teach each unit the same as I did before we went

to two day a week PE classes, we just don't do as many (units) now."

Though student contact time was seen as desirable, two teachers reported complications

when their student contact time increased to daily physical education classes. An unintended

consequence was that it resulted in larger class sizes, which may also be a barrier to change.

When asked what prevented him from implementing program change, Derek (CD) stated:

The problem is that my classes are too big now, about 50 or so in each class…they

(administration) decided to give us daily PE, but they didn't hire more teachers. They

gave us all the same kids on a daily basis instead of every other day like it used to be. I'm

happy to have them daily, but now I don't have enough equipment, and I just end up

doing stations all the time.

An interesting finding related to student contact time is that no questions in the interview

guide specifically related to time, yet time was a frequently mentioned factor when teachers were

discussing change. This may indicate that time is an important factor in determining if teachers

are more or less disposed to change in other areas of their teaching practices.

Discussion

Internal dispositions toward change impact the likelihood that teachers will make changes

to their programs (Murrell et al., 2010; Vannatta, & Fordham, 2004), and socializing agents have

a strong influence on teacher behavior (Lawson, 1983; Richards et al., 2014; Templin, 1981; Van

Maanen, & Schein, 1979). This investigation sought to understand what physical education

teachers perceive as the primary barriers to and facilitators of change, and how socializing agents

impact the change process.

Similar to other studies that are grounded in teacher socialization theory (e.g., Curtner-

Smith, 1999 Smyth, 1995; Solmon, Worthy, & Carter, 1993), the results of this study suggest

that students, as socializing agents, strongly influence teachers' decisions about curriculum and

instruction. Teachers determined the relative success of curricular and instructional change based

on how they perceived students' subsequent reaction in terms of their engagement, enjoyment,

and learning while participating in activities. The CD teachers tended to use improved student

learning and engagement as a measure of whether or not their efforts were successful. Although

NCD teachers valued engagement, they prioritized student enjoyment over learning and were

more reluctant to change practices.

The findings related to NCD teachers are consistent with descriptions in the literature of

physical education teachers who tend to deemphasize student learning in favor of keeping

students busy, happy and good (Placek, 1983). Although CD teachers valued enjoyment, they

appeared to prioritize student learning as a factor when making curricular decisions. This may

suggest that greater internal disposition to change is associated with the importance these individuals give to student learning.

Teachers found their teaching colleagues to be strong socializing agents that were both barriers to and facilitators of change. Teachers' perceptions of their colleagues were dependent on the relative match or mismatch of individual dispositions toward change. This finding supports the literature on socialization theory (Van Maanen & Schein, 1979), which suggests that teachers possess either an innovative or custodial orientation with regard to their organizational role, and their acceptance of the status quo is based on the relative match of their own orientation with socializing agents in the organization (Stroot & Ko, 2006). Several CD teachers assumed leadership roles in change initiatives, while NCD teachers expressed reservations. These findings support Lave and Wenger's (1991) concept of *Communities of Practice (CoP),* in which groups of people in organizations share information and learn from one another. A key concept in the formation of CoP is a core group of people who take on leadership roles and can act as agents of change (Wenger, McDermott, & Snyder, 2002). The results of this study suggest that CD teachers are agents of change, and may be instrumental in cultivating successful CoP.

Participants considered administrators, particularly principals, as passive facilitators of change. They were often viewed as supportive of change, but generally uninvolved. There was a nearly unanimous response from teachers that principals support change if it produces no safety or student behavior issues. In addition, most noted that curriculum and instructional changes are often unnoticed by their principals. For the CD teachers, the hands-off approach was perceived as permission to make change, while the NCD teachers viewed it as support for maintaining current practice. These findings are consistent with the literature in physical education (Lounsbery, McKenzie, Trost, & Smith, 2011; McKenzie & Lounsbery, 2009; Sparkes, Templin,

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& Schempp, 1993), however, this study demonstrates that only passive principal support may actually empower physical education teachers not to change, even when their current approaches are not associated with best practice.

Regardless of change disposition, both CD and NCD teachers referred to the weekly scheduling of physical education class as either a barrier to or facilitator of change. Those who viewed lack of contact as a barrier met with students only 1 or 2 days per week, and noted specifically that they lacked time to assess, promote student learning, and implement a complete curriculum. In contrast, those who met frequently with students indicated that the weekly class schedule was a facilitator that enabled regular assessment of student learning and a more complete curricular approach. Although daily physical education does not guarantee good instructional practice or student learning, the results suggest that daily physical education may be an essential factor in facilitating change. Teachers' perceptions of their ability to administer change is related to actual change. Since they exercise near complete autonomy over their instructional decisions (Hargreaves & Fullan, 2012), especially in physical education (Lee et al., 2007; Whipp, Tan, & Yeo, 2007), providing teachers with adequate teaching time is one important step toward helping them to perceive that change is possible.

In spite of a statistically significant difference between CD teachers and NCD teachers in mean years of teaching experience, the results of the this study are equivocal regarding a potential association of years teaching experience and differences in perceptions between CD and NCD teachers. There were differences between CD and NCD teachers with respect to their perceptions of influence from students, teaching colleagues, and principals, but not in relation to student contact time. Additionally, some teachers (5 out of 18) with greater than 20 years of experience were CD and several others (3 out of 14) with less than 10 years of experience were

NCD. Previous research indicates that CD teachers have significantly fewer years of experience and make fewer program changes (Kern & Graber, in preparation), however, it is unclear whether greater years of experience is a cause for a reduction in change disposition. Woods and Lynn's (2014) longitudinal analysis of the teaching career cycle suggests that teachers may be more or less change-disposed based on years of teaching experience, though disposition toward change was not a focus of their study. Indeed, teacher experience may influence dispositions toward change, as the passage of time would allow for teachers to become accomplished and have a larger sample of experiences from which to base opinions about the effectiveness of their programming. This point remains speculative, but is an important area for future study.

This study represents a cross section of important models/theories that inform teacher change. Shaw et al.'s (1991) model of teacher change indicates a lack of *program satisfaction* is prerequisite to change, Bandura's (1986) social cognitive theory is the basis for addressing teacher disposition *self-efficacy to change*, and Roger's (1962) D*iffusion of Innovations* is the foundation for innovativeness or *willingness to change* that was measured as part of the TCQ-PE (Kern & Graber, in review) and was used to categorize teachers in this study. These theories represent internal factors, while teacher socialization addresses external factors, socializing agents and school context. From the results of the study, it appears that both internal and external factors manifest as barriers to and facilitators of change, though the relative contribution of each is unclear. Future study should seek to further understand the individual influence of both internal and external factors related to teacher change.

Conclusions

The current study sheds light on critical issues associated with efforts to reform physical education in US schools. Physical education teachers vary with regard to their internal drive to

change and more highly change-disposed individuals tend to seek ways to promote student learning more than their less change-disposed counterparts. It is important for administrators of school reform initiatives to recognize that CD teachers not only pursue change more often, but may also focus more on student learning. Supporting CD teachers through strategies such as CoP may actually further their ability to create effective programs (Cox, 2005).

The literature points to a severe disconnect with regard to how school principals interact with physical education teachers and their programs (Lounsbery et al., 2011; Stroot & Ko, 2006). This study illustrates how passive principal support may promote ineffective programs led by less change-disposed teachers. In order to ensure that high quality physical education is delivered in schools, it is crucial that principals have high expectations for student learning, and hold physical education teachers to the same standards of practice as their classroom counterparts.

What Does This Article Add?

The results of this study may encourage physical education teacher educators to identify teaching candidates who are more change-disposed when admitting students into certification programs and help them differentiate instructional strategies for individuals with varying levels of change-dispositions. It may also assist teachers and principals in advocating for greater instructional time in physical education. Education reform laws such as No Child Left Behind have resulted in reduced time for physical education (McMurrer, 2008), and recent data suggest that scheduled physical education class time remains low (Sanchez-Vaznaugh, Sánchez, Rosas, Baek, & Egerter, 2012).

Future research is needed to better understand how to maximize facilitators of and minimize barriers to change associated with best practice in physical education. It is clear that dispositions toward change influence teaching practice, but it is unclear whether dispositions

change over time, and if so, how to promote dispositional change that favors improvements in teaching practice. In addition, more needs to be understood about how to encourage school administrators to become more involved in supporting high quality physical education programming, including cultivating CoP. New knowledge may increase the likelihood of success of reform efforts such as comprehensive school physical activity programs, which depend on the provision of daily physical education.

Tables

Table 6.1

Teacher demographics by change disposition category.

	Total (N = 32)	CD teachers (n = 18)	NCD teachers (n = 14)
Years teaching experience (Mean ± SD)	15.5 ± 10.4	12.2 ± 9.5	19.6 ± 10.4
Male	15	9	6
Female	17	9	8
Elementary	10	5	5
Middle school	9	5	4
High school	7	4	3
Multi-grade level	6	4	2
Delaware	3	2	1
Illinois	9	4	5
Minnesota	6	4	2
Utah	3	2	1
Virginia	5	3	2
Washington	6	3	3

Note: CD = Change disposed; NCD = Not Change Disposed

Table 6.2

Individual participant/school demographics, disposition toward change

Psuedonym	Gender	Grade level	Years experience	Disposition toward change
Kory	M	elementary	1	CD
Derek	M	elementary	2	CD
Larry	M	elementary	3	CD
Lionel	M	elementary	19	CD
Evelyn	F	elementary	25	CD
Greg	M	middle	1	CD
Norma	F	middle	8	CD
Lee	M	middle	10	CD
Brittany	F	middle	16	CD
Erin	F	middle	24	CD
Darleen	F	high	10	CD
Kaden	M	high	8	CD
Victoria	F	high	17	CD
Mara	F	high	21	CD
Deanne	F	multi (K-8)	1	CD
Ted	M	multi (7-9)	3	CD
Tracy	F	multi (K-8)	23	CD
Roger	M	multi (6-9)	28	CD
Mark	M	elementary	3	NCD
Dorothy	F	elementary	9	NCD
Cecilia	F	elementary	19	NCD
Yasmine	F	elementary	24	NCD
Cassandra	F	elementary	27	NCD
Haley	F	elementary	32	NCD
Misty	F	elementary	32	NCD
Stephanie	F	middle	5	NCD
Nancy	F	middle	10	NCD
David	M	middle	15	NCD
Cal	M	middle	16	NCD
Cliff	M	middle	31	NCD
Stan	M	high	20	NCD
Jarod	M	high	32	NCD

CD = Change-disposed; NCD = Not change-disposed

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Appendix A: Institutional Review Board Approval

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Office of the Vice Chancellor for Research

Office for the Protection of Research Subjects
528 East Green Street
Suite 203
Champaign. IL 61820

April 11, 2016

Kim Graber
Kinesiology & Community Health
127 Freer Hall
906 S Goodwin Ave

RE: *Barriers to and Facilitators of Physical Education Teacher Change*
        IRB Protocol Number: 16738

Dear Dr. Graber:

Thank you for submitting the completed IRB application form for your project entitled *Barriers to and Facilitators of Physical Education Teacher Change*. Your project was assigned Institutional Review Board (IRB) Protocol Number 16738 and reviewed. It has been determined that the research activities described in this application meet the criteria for exemption at 45CFR46.101(b)(2).

This determination of exemption only applies to the research study as submitted. Please note that additional modifications to your project need to be submitted to the IRB for review and exemption determination or approval before the modifications are initiated.

Copies of the attached, date-stamped consent form(s) are to be used when obtaining informed consent. If there is a need to revise or alter the consent form(s), please submit the revised form(s) for IRB review, approval, and date-stamping prior to use.

Exempt protocols will be closed and archived five years from the date of approval. Researchers will be required to contact our office if the study will continue beyond five years. If an amendment is submitted once the study has been archived, researchers will need to submit a new application and obtain approval prior to implementing the change.

We appreciate your conscientious adherence to the requirements of human subjects research. If you have any questions about the IRB process, or if you need assistance at any time, please feel free to contact me at OPRS, or visit our website at http://oprs.research.illinois.edu

Sincerely,

LeaAnn Carson

Human Subjects Research Specialist, Office for the Protection of Research Subjects

Appendix B: Email Cover Letter For Pedagogical Change Survey

Dear _____:

My name is Ben Kern and I am a doctoral student (formerly a public school physical education teacher) at the University of Illinois, Department of Kinesiology. I am conducting my dissertation research on the topic of *barriers to and facilitators of pedagogical change among physical education teachers,* for which I am collecting data via an online survey. I am writing to invite you to take part in the study.

I want to know about your experiences as a physical education teacher regarding making changes to the way you teach, and would like you to take a brief 10-minute survey on the topic. Your feedback will be valuable to my research and may be helpful in promoting the physical education field. To participate, simply click on the link below.

Before starting the survey, you will be informed of your rights and asked to give consent to participate. Any information you provide will be kept completely confidential, and your name or school affiliation will not be shared, except in cases when the University or state research oversight personnel require access.

At the end of the survey, you will be asked if you are willing to participate in a follow-up interview. Participants selected for interviews will receive a **$25 gift card** (debit card). If you are selected, I will contact you via email to set up a time for an interview.

I hope you will agree to participate in this study and I would be happy to answer any questions. You can respond to this email or call me at (719)-580-5099.

<div align="center">Click HERE to Participate in this Study</div>

Sincerely,

Ben Kern
Doctoral Student
University of Illinois

Appendix C: Informed Consent For Survey

Required Human Protection Consent Page

PROCEDURES: I understand that I will be asked to complete one survey that will provide information about my experiences as a teacher regarding changes I have made to my physical education program.

VOLUNTARY PARTICIPATION: I understand that my participation is voluntary and that I can withdraw from the study at any time.

RISKS and BENEFITS: I understand that there are no direct benefits associated with participation in this study. The risks for participation are not greater than those of daily activities.

CONFIDENTIALITY: I understand that my questionnaire responses will represent information about my individual teaching practices. I understand that when this research is discussed or published, no one will know that I was in the study. However, laws and university rules might require us to disclose information about you. For example, if required by laws or University Policy, study information which identifies you and the consent form signed by you may be seen or copied by the following people or groups:

- The university committee and office that reviews and approves research studies, the Institutional Review Board (IRB) and Office for Protection of Research Subjects;
- University and state auditors, and Departments of the university responsible for oversight of research;
- The financial sponsor of the research, Illinois Association of Health, Physical Education, Recreation, and Dance.

WHO TO CONTACT WITH QUESTIONS: Questions about the research should be directed to Dr. Kim C. Graber, Dept. of Kinesiology, 129 Freer Hall, University of Illinois, 906 S. Goodwin Avenue, Urbana, IL 61801 (Phone: 217-333-2697 or E-mail: kgraber@illinois.edu). If I have questions about my rights as a research participant, I can call the University of Illinois Institutional Review Board at 217-333-2670, or e-mail that office at irb@illinois.edu.

Check "yes" if you have read and understand the consent form provided on this page and agree to participate in this study. *

If you do not want to participate or have questions about the survey, please note the contact information above, then navigate away from this page.

○ Yes, I have read and understand the consent form. I agree to participate in this study.

NEXT

Satisfaction Question Block

Curriculum refers to the content you teach in your PE program, and includes all the units, daily lessons, activities, and written materials such as lesson plans and assessments you use in your program.

If you don't have a specified curriculum, please rate your satisfaction with the materials you use to teach PE.

How satisfied are you overall with the curriculum you use to teach PE?

○ Extremely satisfied

○ Very satisfied

○ Moderately satisfied

○ Not very satisfied

○ Not at all satisfied

Instructional strategies are techniques or methods you use to teach students knowledge and skills according to your curriculum.
 Some examples of instructional strategies are: 1) demonstrations 2) brief and concise verbal instructions 3) peer teaching 4) modified games

Please rate how satisfied you are overall with the instructional strategies you use to teach PE.

○ Extremely satisfied

○ Very satisfied

○ Moderately satisfied

○ Not very satisfied

○ Not at all satisfied

Class management strategies are ways of organizing and operating your classroom so that students can participate safely and learn from your teaching.
 Procedures such as a) taking attendance, b) getting out and putting away equipment, and c) transitioning between activities are examples of management strategies.

Please rate how satisfied you are overall with the management strategies you use to teach PE.

○ Extremely satisfied

○ Very satisfied

○ Moderately satisfied

○ Not very satisfied

○ Not at all satisfied

Assessments are any of the ways in which you determine how much your students know and can do.
 Some examples of assessments are: 1) unit tests 2) skills tests 3) student self-assessments 4) check lists

Please rate how satisfied you are overall with the assessments you use in your PE classes.

○ Extremely satisfied

○ Very satisfied

○ Moderately satisfied

○ Not very satisfied

○ Not at all satisfied

The learning environment refers to the characteristics of your PE class that make it more or less easy for students to learn what you are teaching.
Some examples of learning environment include: 1) student engagement and participation 2) social interactions 3) student enjoyment

Please rate how satisfied you are overall with the learning environment in your PE classes.

○ Extremely satisfied

○ Very satisfied

○ Moderately satisfied

○ Not very satisfied

○ Not at all satisfied

Please rate your current level of <u>overall</u> satisfaction with your PE program.

○ Extremely satisfied

○ Very satisfied

○ Moderately satisfied

○ Not very satisfied

○ Not at all satisfied

Self-Efficacy Question Block

How confident are you in your ability to make changes to all or part of your PE curriculum?

- ○ Extremely confident
- ○ Very confident
- ○ Moderately confident
- ○ Not very confident
- ○ Not at all confident

How confident are you in your ability to make changes to the instructional strategies that **you use in your PE classes?**

- ○ Extremely confident
- ○ Very confident
- ○ Moderately confident
- ○ Not very confident
- ○ Not at all confident

How confident are you in your ability to make changes to the class management strategies that you use in your PE classes?

- ○ Extremely confident
- ○ Very confident
- ○ Moderately confident
- ○ Not very confident
- ○ Not at all confident

How confident are you in your ability to make changes to the assessments that you use in your PE classes?

- ○ Extremely confident
- ○ Very confident
- ○ Moderately confident
- ○ Not very confident
- ○ Not at all confident

How confident are you in your ability to make changes to the learning environment in your PE classes?

- ◯ Extremely confident
- ◯ Very confident
- ◯ Moderately confident
- ◯ Not very confident
- ◯ Not at all confident

Innovativeness Question Block

Please indicate your opinion of new ideas and ways of teaching PE by answering the following statements.

Note: In the following statements, "New" refers to ideas or ways of teaching that are new to you, not necessarily new in general.

How cautious are you about accepting new ideas or teaching methods?
- ◯ Extremely cautious
- ◯ Very cautious
- ◯ Moderately cautious
- ◯ Not very cautious
- ◯ Not at all cautious

How often do you trust new ideas or teaching methods before seeing others use them successfully?
- ◯ Extremely often
- ◯ Very often
- ◯ Moderately often
- ◯ Not very often
- ◯ Not at all often

Compared to others in your school, how soon do you accept new ideas or teaching methods?
- ◯ Much sooner than others
- ◯ Somewhat sooner than others
- ◯ About the same as others

○ Somewhat later than others
○ Much later than others

How reluctant are you about adopting new ideas or teaching methods?
○ Extremely reluctant
○ Very reluctant
○ Moderately reluctant
○ Not very reluctant
○ Not at all reluctant

How enjoyable do you find trying out new ideas and teaching methods in your PE program?
○ Extremely enjoyable
○ Very enjoyable
○ Moderately enjoyable
○ Not very enjoyable
○ Not at all enjoyable

How frequently do you seek out new ideas and teaching methods?
○ Extremely frequently
○ Very frequently
○ Moderately frequently
○ Not very frequently
○ Not at all frequently

How inventive/creative are you in the way you teach PE?
○ Extremely inventive/creative
○ Very inventive/creative
○ Moderately inventive/creative
○ Not very inventive/creative
○ Not at all inventive/creative

Pedagogical Changes Question Block

In the past 3 years what changes have you made to your PE curriculum?

Check all that apply

☐ I changed to a whole different curriculum - Example: yearly plan, unit plans, & daily lessons

☐ I changed the focus of my curriculum - Example: sport and games to fitness concepts

☐ I added or subtracted one or more units of instruction

☐ I added or subtracted one or more daily lessons

☐ I added or subtracted some activities for the current lessons I teach

☐ No change

☐ Other, please write in below

In the past 3 years what changes have you made to the instructional strategies you use to teach PE?

Check all that apply

☐ I changed my instruction to increase the time students are physically active during PE class

☐ I changed my instruction to improve student learning of skills during PE class

☐ I changed my instruction to individualize activities during PE class

☐ I changed my instruction to increase student enjoyment of PE

☐ I changed my instruction to allow for more game play

☐ No change

☐ Other, please write in below

In the past 3 years what changes have you made to the class management strategies you use in your PE classes?

Check all that apply

☐ I changed how I take roll call

☐ I changed management strategies to decrease down time between activities

☐ I changed management strategies to reduce time getting out and putting away equipment

☐ I changed management strategies to increase student on-task behavior

☐ I changed procedures for student personal needs (bathroom, shoes, drinks of water, locker room, etc...)

☐ No change

☐ Other, please write in below

In the past 3 years what changes have you made to the assessments you use in your PE classes?

Check all that apply

☐ I added or subtracted one or more standardized tests - Examples: FitnessGram, President's Challenge

☐ I added or subtracted one or more new district curriculum assessments - Example: quarterly or semester exams

☐ I added, subtracted, or changed one or more standards-based assessments

☐ I added, subtracted, or changed the unit tests I use

☐ I added, subtracted, or changed one or more informal assessments - Examples: skill tests, checklists, peer assessments

☐ No change

☐ Other, please write in below

In the past 3 years what changes have you made to the learning environment in your PE classes?

Check all that apply

☐ I made changes to promote inclusion of all students in PE class

☐ I made changes to ensure student physical safety

☐ I made changes to promote positive social interaction between students

☐ I made changes to promote cultural sensitivity

☐ I made changes to improve my relationship with my students

☐ No change

☐ Other, please write in below

Initiation of Changes Question Block

Regarding the changes you have made in the past 3 years, indicate
who <u>primarily</u> initiated the changes in each different area.

An initiator is a someone or something that encouraged or required a change to take place.

If you are the only initiator of a change, check **"Me, alone."**
If you and your principal worked together to make a change happen, check **"Me & my principal"**
If your school administration (independent of you) encouraged or required a change,
check **"Administration"**
If you participated in a professional development initiative that encouraged you to change,
check **"Professional Development Initiative"**
If a law or mandate required you to make a change, check **"State Requirement"**
If you did not make any change in one of the areas (curriculum, instructional strategies..etc.), check **"No Change"**

	Me, alone	Me & fellow PE teacher	Me & my Principal	Administration	Professional Development Initiative	State Requirement
Curriculum						
Instructional Strategies						
Class Management						
Assessment						
Learning Environment						

Likelihood to Make Future Changes Question Block

How likely are you to make curriculum changes in the next 12 months?

○ Extremely likely

○ Very likely

○ Moderately likely

○ Not very likely

○ Not at all likely

How likely are you to make instructional strategy changes in the next 12 months?
Examples: a) communicating lesson objectives, b) maximizing student participation, c) modifying activities

○ Extremely likely

○ Very likely

○ Moderately likely

○ Not very likely

○ Not at all likely

How likely are you to make class management changes in the next 12 months?
 Examples: a) roll call procedure b) start and stop signals c) getting out and putting away equipment

○ Extremely likely

○ Very likely

○ Moderately likely

○ Not very likely

○ Not at all likely

How likely are you to make assessment changes in the next 12 months?
 Examples: 1) unit tests 2) skills tests 3) student self-assessments 4) check lists

○ Extremely likely

○ Very likely

○ Moderately likely

○ Not very likely

○ Not at all likely

How likely are you to make learning environment changes in the next 12 months?
Examples: a) small-sided games to increase student participation b) developmentally appropriate
equipment and activities c) activities that promote positive social interactions

○ Extremely likely

○ Very likely

○ Moderately likely
○ Not very likely
○ Not at all likely

Demographics

Please enter the US state and county in which your school is located.
This is just to make sure we don't mistake you for a PE teacher in another state. Your information will not be shared with anyone, anytime.

US State

County

What is your gender?
○ Male
○ Female

How many years have you taught K-12 Physical Education?
Enter the total number of years you've taught PE, even if these are not continuous years.

Do you currently hold a valid teaching license that is endorsed for teaching Physical Education, or not?
○ Currently I hold a valid teaching license that is endorsed for teaching PE
○ Currently I do <u>not</u> hold a valid teaching license that is endorsed for teaching PE

What other subjects do you teach in grades K-12 in addition to Physical Education?
Choose all that apply

☐ None, I only teach PE   ☐ Secondary Language Arts

☐ Elementary classroom   ☐ Secondary Math

☐ Elementary Art   ☐ Secondary Science

☐ Elementary Music   ☐ Secondary Social Studies

☐ Elementary Resource   ☐ Secondary Art

☐ Elementary / Secondary Special Education   ☐ Secondary Music

☐ Secondary Health   ☐ Other, please write in ☐

At what grade level(s) do you primarily teach Physical Education?
Choose all that apply.

☐ Kindergarten   ☐ 7th grade

☐ 1st grade   ☐ 8th grade

☐ 2nd grade   ☐ 9th grade

☐ 3rd grade   ☐ 10th grade

☐ 4th grade   ☐ 11th grade

☐ 5th grade   ☐ 12th grade

☐ 6th grade

Would you be willing to participate in a follow-up interview? If you participate in an interview, you will receive a gift card in the amount of $25.
(Only a limited amount of participants will be selected for interview)

If you are willing to be interviewed, click **YES** then enter the email address you wish to be contacted at.

After you check YES or NO, please click "Finish" when you are done to submit your survey.

    ◯ Yes, I would like to participate in a follow up interview and receive a $25 gift card.

         Enter your email address in the space below

    ◯ No, I do not want to participate in a follow up interview

Appendix E: Informed Consent For Interview

UNIVERSITY OF ILLINOIS
AT URBANA–CHAMPAIGN

College of Applied Health Sciences
Department of Kinesiology and Community Health
906 S. Goodwin Ave
131 Freer Hall
Urbana, IL. 61801

Informed Consent for Interview

You are invited to participate in a research study conducted by Dr. Kim Graber and colleagues at the University of Illinois- Urbana-Champaign. The study is focused on understanding physical educators perceptions of the change process.

Purpose and Procedures
The objective of this study is to examine the perceptions of physical education teachers regarding making pedagogical changes (teaching changes). If you agree to participate in this study, you will be interviewed by one of the researchers and the interview will be audio recorded. This interview will last approximately 45-60 minutes. You will be asked questions about your views on making changes to the way you teach physical education.

Requirements
Participants must be a current or former physical education teacher.

Participation is Voluntary
Participation in this research is completely voluntary. You may refuse to participate in the study or may discontinue your participation at any time with absolutely no repercussion. The decision to engage in this research, declining to answer questions or withdrawing from the study will have no effect on your relationship with the University of Illinois, nor will your participation or lack thereof be shared with anyone at any time. You may refuse to answer any questions and stop the interview at any time.

Benefits and Risks
This study will allow researchers to better understand physical educators' thoughts related to making changes to their teaching. A deeper understanding related to teachers' opinions of educational change may be gained. There are no risks to individuals participating in this study beyond those that exist in every day life.

Confidentiality
In general, we will not tell anyone any information about you. When this research is discussed or published, no one will know that you were in the study. However, laws and university rules might require us to disclose information about you. For example, if required by laws or University Policy, study information which identifies you and the consent form signed by you may be seen or copied by the following people or groups:

- The university committee and office that reviews and approves research studies, the Institutional Review Board (IRB) and Office for Protection of Research Subjects;
- University and state auditors, and Departments of the university responsible for oversight of research;
- The financial sponsor of the research, Illinois Association of Health, Physical Education, Recreation, and Dance.

Contact Information
Questions related to this research should be directed to Dr. Kim Graber. She can be reached by email at kgraber@illinois.edu and by phone at (217) 333-2697. Any questions concerning participants' rights should be directed to University of Illinois Institutional Review Board by email at irb@illinois.edu or by phone at (217) 333-2679. Collect calls will be accepted if a person identifies themselves as a research participant.

Appendix F: Pedagogical Change Interview Guide

Hello [interviewee] my name is [interviewer] it's nice to meet you. Thank you for your willingness to participate in the study. Before we begin, I want to take a minute to review the purpose of this interview: I am interested in your experiences as a physical education teacher regarding when you have made, attempted to make, or decided not to make changes to the way you teach. I'd like to know more about how you have experienced the change process and what might have made the process easier or harder.

The information gathered today will help educators to better understand the lives and careers of teachers and will be used in possible research publications. Anything you say will be kept strictly confidential. I will transcribe the audio recording of this conversation and then remove your name and any identifying information from the interview and replace it with a code number. The interview should take between 45 minutes to 1 hour.

Your participation in this interview is entirely optional. There is no penalty for not participating, and you may drop out of the study at any point. When the interview is concluded, I will send you a summary of your responses to the questions so that you can review them check for accuracy.

Does everything sound alright? [wait for response] Do you have any questions about the interview or any of the other information I have given to you before we begin? [wait for response] Okay, then let's begin.

Before we start, I want to let you know that I will be asking you questions about your opinions and experiences in making changes to the way you teach physical education. Changes can include alterations to curriculum, instructional strategies, class management, assessment, and learning environment. When I refer to "changes to the way you teach PE" I am referring to all of these areas unless otherwise specified.

Research Question
What is the relationship between physical education teachers' beliefs about teaching and learning and their desire to make change?
- How are physical education teachers' dispositions about the change process related to their beliefs about teaching and learning?

Related Interview Questions
1. How would you describe the content of your PE program?
    a. Do you use a specific curriculum? If so, which one and why? If not, how would you describe what you use to teach PE?
    b. What is the emphasis of your PE program?
    c. What are the most important things students should learn in PE?
    d. What are the most important things PE teachers should do to promote student learning?
2. How would you describe the way you teach PE?

a. How do you get students to learn new things in PE? (instructional strategies)
b. What is your approach to classroom management? (management)
c. How do know if your students are learning?   (assessment)
d. How do you establish a classroom environment that is conducive to learning? (learning environment)

3. What parts of your PE program are you willing to change?
   a. What is the possibility of making these things?
   b. How committed are you to making these changes?
4. What parts of your PE program are you not willing to change?
   a. What if anything could make you change your mind?

Research Question
What are physical education teachers' perceptions of the barriers to and facilitators of pedagogical change?
- How do socializing agents such as students, colleagues, and administrators enhance or inhibit the change process?

Related Interview questions
1. What has your experience been like in terms of making changes to the way you teach?
   a. Have you made changes to your teaching and/or program over time?
   b. What did your teaching/program look like when you began teaching? Now?
   c. How often do you make changes to your teaching and/or program?
   d. What kind of changes do you make? Major? Minor?
   e. Do you like to make changes to your program? Why or why not?
   f. What is the reason for your making changes? Your not making changes? (Ask one or the other based on previous questions)
2. Tell me about a time when you made a change to the way you teach physical education.
   a. What made you decide to make the change?
   b. How difficult was the decision to make the change?
   c. What things did you consider prior to making the change?
   d. What made the change easier? Harder?
   e. How did students, other teachers, your principal, respond to the change?
   f. What was the reaction from parents to the change?
3. When you make changes to your teaching, how do **students** usually respond?
   a. NEW QUESTION (April 21, 2016) – How does student learning affect change? (student enjoyment, and student on-task influence teacher….how does student learning affect?
   b. How do students affect your ability to make changes to the way you teach?
   c. Are there parts of your program that are easier or harder to change in regard to how students react? (example: curriculum, instructional strategies, class management assessment, learning environment)
4. When you make changes to your teaching, how do your **teaching colleagues** usually respond?

a. How do teaching colleagues impact your ability to make changes to the way you teach?

b. Are there parts of your program that are easier or harder to change in relation to how your teaching colleagues react? (example: curriculum, instructional strategies, class management assessment, learning environment)

5. When you make changes to your teaching, how does your **principal** respond?

a. How does your principal impact your ability to make changes to the way you teach?

b. Are there parts of your program that are easier or harder to change in relation to how your principal reacts? (example: curriculum, instructional strategies, class management assessment, learning environment)

6. When you make changes to your teaching, how do **parents of your students** or other community members usually respond?

a. How do parents or community members impact your ability to make changes to the way you teach?

b. Are there parts of your program that are easier or harder to change in relation to how parents & community react? (example: curriculum, instructional strategies, class management assessment, learning environment)

7. What was the most difficult change you've ever made to your teaching?

a. What made this change so difficult?

b. What would have made the change easier?

8. What was the easiest change you've made to your teaching?

a. What made this change easy?

b. What would have made the change harder?

9. When you make changes to the way you teach, how supported do you feel?

a. What makes change more difficult for you?

b. What makes change easier for you?

10. If you could change any part or parts of your teaching of PE, what would it be, and why?

a. What has prevented you from making this change?

During this next series of questions, I will ask you about changes to your teaching that you decided on your own to make, and changes that you were asked by others to make. Any changes that you alone decided to make, I will refer to as "self-initiated."

Any changes that someone else such as your teaching colleagues, your principal, or a researcher encouraged or required you to make I will refer to as "externally initiated." This would include changes that you were required to make because of a new district policy or even a new state law. Is that OK? [Wait for a response, clarify if needed]

Research Question
What are physical education teachers' perceptions of the change process when pedagogical changes are self- and externally- initiated?

• How do physical education teachers perceive the role of socializing agents during self- and externally- initiated pedagogical change?

• How do physical education teachers perceive the sustainability of pedagogical changes that are self- and externally- initiated?

<u>Related Interview Questions</u>
1. How often do you make self-initiated and externally initiated changes?
   a. What kind of self-initiated changes have you made?
   b. What kind of externally initiated changes have you made?
2. Do you have a preference for self-initiated or externally initiated change? (prefer one over the other) Why?
3. How does the initiation of change impact your students? Or does it?
   a. Why do you think this is?
4. How does the amount of support from your teaching colleagues vary with self-initiated and externally initiated change?
   a. Do you encourage colleagues to make the same changes you make?
   b. Do colleagues encourage you to make changes?
5. How does the amount of support from your principal vary with self-initiated and externally initiated change?
   a. Do you ask your principal to help you with changes?
   b. Does your principal encourage or require you to change?
6. How does the amount of support from parents/community vary with self-initiated and externally initiated change?
7. In your opinion, which are the most effective changes, self-initiated or externally initiated? Why?
8. Which do you continue to implement longer, self-initiated changes or externally initiated changes? Why is that? Can you give an example from your experience?
9. Which do you think is more effective in making and sustaining changes, self-initiated changes or externally initiated changes? Why? Can you give an example from your experience?