




2021

## AN EXAMINATION OF HIGH SCHOOL PHYSICAL EDUCATION TEACHERS SUPPORT OF STUDENTS' PHYSICAL ACTIVITY SELF- EFFICACY

Ken Murfay

University of Kentucky, k.murfay@uky.edu

Author ORCID Identifier:

 <https://orcid.org/0000-0001-9980-2449>

Digital Object Identifier: <https://doi.org/10.13023/etd.2021.105>

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

### Recommended Citation

Murfay, Ken, "AN EXAMINATION OF HIGH SCHOOL PHYSICAL EDUCATION TEACHERS SUPPORT OF STUDENTS' PHYSICAL ACTIVITY SELF-EFFICACY" (2021). *Theses and Dissertations--Education Sciences*. 89.

[https://uknowledge.uky.edu/edsc\\_etds/89](https://uknowledge.uky.edu/edsc_etds/89)

This Doctoral Dissertation is brought to you for free and open access by the College of Education at UKnowledge. It has been accepted for inclusion in Theses and Dissertations--Education Sciences by an authorized administrator of UKnowledge. For more information, please contact [UKnowledge@sv.uky.edu](mailto:UKnowledge@sv.uky.edu).

## **STUDENT AGREEMENT:**

I represent that my thesis or dissertation and abstract are my original work. Proper attribution has been given to all outside sources. I understand that I am solely responsible for obtaining any needed copyright permissions. I have obtained needed written permission statement(s) from the owner(s) of each third-party copyrighted matter to be included in my work, allowing electronic distribution (if such use is not permitted by the fair use doctrine) which will be submitted to UKnowledge as Additional File.

I hereby grant to The University of Kentucky and its agents the irrevocable, non-exclusive, and royalty-free license to archive and make accessible my work in whole or in part in all forms of media, now or hereafter known. I agree that the document mentioned above may be made available immediately for worldwide access unless an embargo applies.

I retain all other ownership rights to the copyright of my work. I also retain the right to use in future works (such as articles or books) all or part of my work. I understand that I am free to register the copyright to my work.

## **REVIEW, APPROVAL AND ACCEPTANCE**

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Director of Graduate Studies (DGS), on behalf of the program; we verify that this is the final, approved version of the student's thesis including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Ken Murfay, Student

Dr. Aaron Beighle, Major Professor

Dr. Melinda Ickes, Director of Graduate Studies

AN EXAMINATION OF HIGH SCHOOL PHYSICAL EDUCATION TEACHERS  
SUPPORT OF STUDENTS' PHYSICAL ACTIVITY SELF-EFFICACY

---

DISSERTATION

---

A dissertation submitted in partial fulfillment of the  
requirements for the degree of Doctor of Philosophy in the  
College of Education  
at the University of Kentucky

By  
Ken Murfay  
Lexington, Kentucky  
Director: Dr. Aaron Beighle, Professor of Kinesiology and Health Promotion  
Lexington, Kentucky  
2021

Copyright © Ken Murfay 2021  
<https://orcid.org/0000-0001-9980-2449>

## ABSTRACT OF DISSERTATION

### AN EXAMINATION OF HIGH SCHOOL PHYSICAL EDUCATION TEACHERS SUPPORT OF STUDENTS' PHYSICAL ACTIVITY SELF-EFFICACY

Providing students with experiences to increase their confidence (self-efficacy) to be physically active is important because of the many health benefits associated with physical activity (U.S. Department of Health and Human Services [USDHHS], 2020). Several studies have shown that physical activity (PA) tends to decline as students age (Cooper et al., 2015; Metcalf et al., 2015; Troiano et al., 2008) and the largest declines usually occur in adolescence (Sallis, 2000). It is recommended that physical education (PE) serve as an intervention to promote PA and provide students with experiences to increase motor competence and PA knowledge (Weiss, 2013). Interventions within PE have also been found to increase PA self-efficacy (Annesi et al., 2007), which is a person's beliefs about their capability to be physically active despite barriers (Voskuil & Robbins, 2015). Several studies have found PA self-efficacy to be significantly associated to PA (Annesi, 2006; Annesi et al., 2007; Van der Horst et al., 2007), which supports an examination of experiences to support PA self-efficacy in PE.

Most research provides a general description of how to increase PA self-efficacy by providing students with experiences that align with the four sources of self-efficacy (mastery experience, vicarious experiences, social persuasions, physiological/emotional states). Outside of these studies, it is unclear from the research how high school PE teachers try to support students' PA self-efficacy beliefs with in-person and online instruction (Pittman, 2020; Voskuil & Robbins, 2015). Asking current high school PE teachers about the practices that they used to support students' PA self-efficacy while teaching in-person/online provided examples of how PE teachers are trying to support students' beliefs in their capabilities to be physically active.

The study participants were 14 (8 female/6 male) current high school PE teachers with three years teaching experience who have taught both in-person and online high school PE in the United States. The PE teachers participated in individual semi-structured interviews online that lasted around an hour each. Interview questions asked teachers to describe what their normal class routines were based on the sources of self-efficacy and their rationale for those decisions. Participants were also asked about their perceptions of students' PA self-efficacy beliefs and how PE could support students' PA self-efficacy. Interviews were analyzed using a deductive thematic analysis based on the sources of self-efficacy. Second-level coding examined themes/patterns within each source of self-efficacy (Boyatzis, 1998). This produced a more complete understanding of how a few current PE teachers are supporting students' PA self-efficacy through in-person/online practices, what were the similarities and differences of in-person/online instruction, and how the described PE practices aligned with recommended practices to increase PA self-efficacy.

The findings indicated that according to teachers, having high PA self-efficacy meant that students have had successful experiences that have resulted in an increase of PA knowledge which allowed students to design their own PA while not being distracted by social comparison. Teachers described having varying levels of control over students'

PA experiences, students' observations, and the social persuasion that students were provided in PE. Overall, teachers in the study designed and implemented (environmental factor) the PA experiences (behaviors) that students participated in which some teachers believed could influence students' interpretation of their mastery experiences with PA (theme 1). Teachers decided which PA students would participate in, what a successful PA experience entailed, how PA experiences were designed, and what PA content knowledge instruction and PA management skills were put into practice. Teachers also had some control over the observations that students had in PE (theme 2). The teachers chose who modeled PA to the whole class, when whole group modeling occurred, what different types of modeling experiences students participated in, and how activities like competition and fitness testing were designed. The teachers also provided social persuasion in different ways which they said influenced students' perceptions of PA and students' PA self-efficacy (theme 3).

The sudden move from in-person to online instruction resulted in many changes to the PA experiences that students were provided in PE. Teachers had to change which physical activities students would participate in, how students would demonstrate participation with PA, and how PA experiences were designed. The observations that students were provided also changed when instruction moved online. Students no longer modeled PA to their classmates and most teachers primarily relied on online videos to model PA to the students. There was limited peer social comparison due to students not seeing each other participate in PA that often and the absence of competition. The social persuasion that teachers provided to students also changed when instruction moved from in-person to online. Teachers struggled to connect with students online and thought it was difficult to provide students with encouragement to be physically active.

For the teachers in this study, external factors had some varying degree of influence on teachers' decisions; however, decisions were mostly based on teachers' interpretations of the overall PE experience. This resulted in a wide range of experiences that could potentially increase/decrease students' PA self-efficacy. It is recommended that teachers' decisions be based more on research than just teacher interpretations of PE to assist in ensuring that PE practices are more aligned to recommended practices in the literature to support student PA self-efficacy.

KEYWORDS: Physical Activity, Physical Education, Self-efficacy, High School.

Ken Murfay

---

*(Name of Student)*

04/05/2021

---

Date

AN EXAMINATION OF HIGH SCHOOL PHYSICAL EDUCATION TEACHERS  
SUPPORT OF STUDENTS' PHYSICAL ACTIVITY SELF-EFFICACY

By  
Ken Murfay

Dr. Aaron Beighle  
\_\_\_\_\_  
Director of Dissertation

Dr. Melinda Ickes  
\_\_\_\_\_  
Director of Graduate Studies

04/05/2021  
\_\_\_\_\_

Date

## ACKNOWLEDGMENTS

I would like to acknowledge several people who have assisted me in completing my dissertation. First, my Dissertation Chair, Aaron Beighle, is the person I aspire to be. Aaron has provided me with the perfect amount of encouragement, praise, and challenge. The department chair, Heather Erwin has also been extremely helpful throughout this process. I would have been completely lost if not for both of you. Next, I wish to thank the complete Dissertation Committee, and outside reader, respectively: Aaron Beighle, Heather Erwin, Ellen Usher, Justin Bathon, and Stephanie Bennett. Each individual provided insights that guided and challenged my thinking, substantially improving the finished product. A special thanks goes out to my parents and sisters who have always supported my decisions. I love you all. Finally, I wish to thank the respondents of my study (who remain anonymous for confidentiality purposes).

## TABLE OF CONTENTS

ACKNOWLEDGMENTS .....	iii
LIST OF TABLES .....	viii
LIST OF FIGURES .....	ix
CHAPTER 1. Introduction.....	1
1.1 Study Overview .....	1
1.1.1 Relevance of the Study .....	1
1.1.2 Physical Education.....	3
1.1.3 Social Cognitive Theory .....	4
1.1.4 Self-Efficacy .....	4
1.1.5 Physical Activity Self-Efficacy.....	8
1.2 Statement of the Problem .....	10
1.3 Purpose and Significance of the Study.....	10
1.4 Research Design and Questions .....	11
1.5 Chapter Guideline.....	12
CHAPTER 2. Literature Review.....	13
2.1 Implemented PA Opportunities to Influence Students' Interpretation of Their Mastery Experiences.....	14
2.1.1 In-Person PA Opportunities.....	16
2.1.2 Online PA Opportunities.....	18
2.1.3 In-Person Experiences for PA Content Knowledge and PA Management Skills .....	19
2.1.4 Online Experiences for PA Content Knowledge and PA Management Skills .....	20
2.2 Implemented PA Opportunities to Influence Students' Interpretation of Their Vicarious Experiences .....	22
2.2.1 In-Person Observations.....	24
2.2.2 Online Observations.....	26
2.3 Implemented Social Persuasion to Influence PA Self-Efficacy.....	27



2.3.1	In-Person Examples of Social Persuasion.....	29
2.3.2	Online Examples of Social Persuasion .....	31
2.4	<i>Implemented Practices Influence on Students’ Interpretation of Their Physical and Emotional States</i> .....	32
2.4.1	In-Person Practices that Influence Students’ Interpretation of Their Physiological and Emotional States.....	34
2.4.2	Online Practices that Influence Students’ Physical and Emotional States ...	35
2.5	<i>Teachers’ Perceptions on Implemented PE Practices</i> .....	36
2.6	<i>Summary of Literature Review</i> .....	37
CHAPTER 3. Research Methods.....		38
3.1	<i>Introduction</i> .....	38
3.2	<i>Participants</i> .....	39
3.3	<i>Principal Investigator Positionality</i> .....	40
3.4	<i>Design</i> .....	40
3.5	<i>Data Collection Methods</i> .....	41
3.5.1	Interviews.....	41
3.5.2	Field Notes .....	41
3.5.3	Analytic Memos.....	42
3.6	<i>Analysis</i> .....	42
3.7	<i>Credibility and Trustworthiness</i> .....	44
3.8	<i>Summary</i> .....	45
CHAPTER 4. Results.....		50
4.1	<i>Research Question 1: Students’ Physical Activity Self-Efficacy</i> .....	50
4.2	<i>Research Question 2a: Teachers’ In-Person Examples to Support Students’ PA Self-Efficacy</i> .....	52
4.2.1	Theme 1: Implemented PA Experiences.....	52
4.2.1.1	Implemented Physical Activities .....	53
4.2.1.2	Parameter of a Successful PA Experience .....	53
4.2.1.3	Design of PA Experiences .....	54
4.2.1.4	Implemented PA Content Knowledge Instruction.....	57
4.2.1.5	Implemented PA Management Experiences.....	60

4.2.2	Theme 2: Implemented Observations for Students.....	62
4.2.2.1	Implemented Modeling Experiences .....	62
4.2.2.2	The Occurrence of Teacher Modeling .....	64
4.2.2.3	Competition and Fitness Testing Design .....	65
4.2.3	Theme 3: Social Persuasion from Teachers and Students .....	68
4.3	<i>Research Question 2b: Teachers' Online Examples to Support Students' PA Self-Efficacy</i> .....	70
4.3.1	Implemented PA Experiences.....	71
4.3.1.1	Implemented Physical Activities .....	71
4.3.1.2	Parameter of a Successful PA Experience .....	72
4.3.1.3	Design of PA Experiences .....	73
4.3.1.4	Implemented PA Content Knowledge Instruction.....	74
4.3.1.5	Implemented PA Management Skills .....	77
4.3.2	Theme 2: Implemented Observations for Students.....	78
4.3.2.1	Implemented Modeling Experiences .....	78
4.3.2.2	PA Design .....	80
4.3.3	Theme 3: Social Persuasion from Teachers and Parents .....	82
4.4	<i>Research Question 3: Teachers' Rationale for Decisions</i> .....	84
4.5	<i>Summary of Results</i> .....	86
CHAPTER 5. Discussion.....		89
5.1	<i>Study Overview</i> .....	90
5.2	<i>Review of Findings</i> .....	90
5.3	<i>Research Question 4: Comparison of Described PE Practices to Recommended Practices</i> .....	92
5.4	<i>Research Question 4: Comparison of In-Person and Online Practices</i> .....	97
5.5	<i>Analysis of the Results</i> .....	101
5.6	<i>Recommended Online Physical Education Practices</i> .....	106
5.7	<i>Limitations and Future Research</i> .....	109
5.8	<i>Contribution to the Literature</i> .....	110
5.9	<i>Conclusion</i> .....	111
Appendix.....		112

<i>TEACHER INTERVIEW QUESTIONS</i> .....	112
References.....	116
Vita.....	141

## LIST OF TABLES

Table 1 Participant Information .....	46
Table 2 Participant Background Information .....	46
Table 3 Interview Question Design .....	47
Table 4 First-level Coding Categories .....	48

LIST OF FIGURES

Figure 1 Teachers' Decision-Making Process..... 88

## CHAPTER 1. INTRODUCTION

### 1.1 Study Overview

This qualitative study attempted to discover practices and examples of how current high school physical education (PE) teachers are working to support physical activity (PA) self-efficacy with in-person (pre-pandemic) and online (during pandemic) instruction based on the four sources of self-efficacy. The study utilized semi-structured interviews to better understand teachers' in-person/online practices, their rationale for decisions, and their beliefs on how students' PA self-efficacy is developed. The results provided examples of how some high school PE teachers are implementing experiences to support PA self-efficacy with in-person and online instruction. The discussion examined strategies used to increase PA self-efficacy both pre-pandemic and during pandemic. This chapter briefly explained how significant research on PA is for adolescents, how PE can provide adolescents with PA experiences, and how social cognitive theory can assist in understanding the relationship between PE and PA. The chapter also described the sources of self-efficacy, explained PA self-efficacy, and reviewed the literature on PA self-efficacy's relationship to PA. At the conclusion of this chapter, the study design and research questions to be answered were provided. The information presented in this chapter will substantiate the need for research into PA self-efficacy in high school PE.

#### 1.1.1 Relevance of the Study

Research examining PA is relevant because of the known benefits of PA and known decline in PA as students age (Cooper et al., 2015; Metcalf et al., 2015; Troiano et al., 2008; U.S. Department of Health and Human Services [USDHHS], 2020; Van der

Horst et al., 2007). Regular PA is associated with improved body composition, prevention of obesity, reduced risk of cancer, improved quality of life, and improved cardiovascular health (Fernhall & Agiovlaitis, 2008; Gunter et al., 2012; U.S. Department of Health and Human Services [USDHHS], 2020). Increased PA also contributes to a more positive self-concept and self-esteem (Dishman et al., 2006; Lubans et al., 2016) and has been linked to higher academic results (Singh et al., 2012). To receive these benefits, it is recommended that adolescents engage daily in 60 minutes of physical activity (USDHHS, 2020); however, one large national study found that only 8% of high school students are meeting that recommendation when objectively measured (Troiano et al., 2008). Furthermore, the Centers for Disease Control and Prevention (2014) reported that 15% of youth participate in no PA at all.

Given the known benefits and the low levels of physical activity for adolescents, it is reasonable to suggest that PA interventions be put in place to assist students in adopting a physically active lifestyle. An intervention can trigger a new motivational process which can lead to new behaviors in the short-term and long-term (Cohen et al., 2017). For youth, it is recommended that PA interventions offer a variety of activities that are enjoyable and developmentally appropriate (Troost et al., 1999) to support students' confidence to be active in their environments (Cohen et al., 2017). While a variety of interventions have been examined, here PE as a PA intervention will be the focus. Schools are the ideal environment to promote PA because of the prevalence of PE in schools, trained PE teachers, and facilities provided for PA (Fairclough et al., 2002).

### 1.1.2 Physical Education

Physical education is defined as that portion of the overall educational curriculum designed to provide students with the skills, knowledge, and attitudes to be active for a lifetime (Society of Health and Physical Educators [SHAPE] America, 2013). PE can take a public health approach to instruction as a means of better promoting lifelong physical activity (Sallis & McKenzie, 1991). The primary goal of this approach would be increasing PA during PE as well as beyond because of the health benefits associated with PA. PE would shift away from a focus on sports and competition and instead focus on increasing PA that is motivating to the students. Sallis et al. (2012) later referred to this approach as health optimizing PE (HOPE). HOPE curriculum and lessons focus on health-related PA and achieving other PE goals like motor competence/PA knowledge through movement. Sallis et al. (2012) suggested these secondary goals be taught through movement with an emphasis on limiting sedentary time in PE to assist in improving students' health by increasing PA participation. HOPE aligns with PE in that it wants to give students the “knowledge, skills, abilities, and confidence to be physically active for life” (Sallis et al., 2012, p. 132).

PE is a planned, sequential, standards-based program of curricula and instruction designed “to develop physically literate individuals who have the knowledge, skills, and confidence to enjoy a lifetime of healthful PA” (Society of Health and Physical Educators [SHAPE] America, 2013, p. 1). Students in PE learn how to live an active lifestyle (Haerens et al., 2010) by participating in activities designed to improve motor competence and PA knowledge, which have been both found to be positively associated with PA (Fredriksson et al., 2018; Robinson et al., 2015). Students' feelings towards PA



are also developed in PE and are a strong predictor of commitment to PA (Weiss et al., 2012). Weiss (2013) recommended that PA interventions like PE teach students life skills like motor skill competencies and PA knowledge while also developing positive feelings/attitudes about PA to help to increase students' motivation to be physically active. Social cognitive theory, a motivational theory, will be used to better understand how PE can potentially influence the many factors associated with students' PA levels.

### 1.1.3 Social Cognitive Theory

Social cognitive theory purports that human thought and action are the product of the reciprocal causation of personal factors (cognition, affect, and biological events), behavior, and environmental factors (Bandura, 1997). These factors influence each other and can influence future behaviors (Bandura, 1998). For example, a PE teacher may select a specific instructional strategy (environmental factor) to increase student success (behavior), which increases a student's confidence (personal factor) for that task. This in turn could impact decisions to engage in that task beyond PE (behavior). In this example, the environment influences how successful individuals are performing a behavior, which influences confidence and future actions. It is important to note that there is not equal strength of influence between the factors. The "influence will vary for different activities and under different circumstances" (Bandura, 1997, p. 6).

### 1.1.4 Self-Efficacy

Self-efficacy is the belief a person has about their capabilities to produce a given outcome for a specific task and is a central component of the social cognitive theory (Bandura, 1997). Self-efficacy answers the question, "Can I do this?" It is a measure of how confident someone is to accomplish a specific task or perform a specific skill. Given

the reciprocal nature of the personal, environmental, and behavioral factors outlined in social cognitive theory, a person's self-efficacy can influence behaviors, and those behaviors can influence self-efficacy. In theory, an individual's self-efficacy beliefs are the foundation of motivation, action, and future courses of action (Bandura, 1998; Pajares, 2006). These beliefs are based on a person's abilities and can influence whether a behavior is executed. For example, a person with low self-efficacy for indoor rock climbing will be less likely to participate in that activity than a person who has higher self-efficacy for indoor rock climbing based on a person's beliefs that they will be successful participating in the activity. Having low self-efficacy may also cause someone to avoid challenging tasks. In this way self-efficacy influences individuals' choices and aspirations (Bandura, 1998). Self-efficacy can also influence a person's effort and "resilience to adversity" (Bandura, 1998, p. 51). An individual with high self-efficacy will more likely show self-regulation, greater cognitive resourcefulness, and strategic flexibility (Bandura, 1998). For example, when a student with high self-efficacy experiences a setback, they will look to try again using a different learning strategy and increased effort. Conversely, students with low self-efficacy who experience a setback may blame their abilities, decrease their effort, and possibly quit (Bandura, 1998). In this way, self-efficacy can influence how individuals react in stressful situations. Education research has found that self-efficacy is a better predictor of motivation and future action than other motivational constructs such as interest (Pajares, 2006). The predictive potential of self-efficacy and its positive associations to future action is the reason self-efficacy is preferred over other motivational constructs.

According to Bandura (1997), self-efficacy is developed through the interpretation of mastery experiences, vicarious experiences, social persuasion, and physiological and emotional states. These four hypothesized sources of self-efficacy can influence students in different ways due to how students interpret and perceive the information (Bandura, 1997). The weight and interpretation of the information depend on personal and contextual factors (Usher & Pajares, 2008). Mastery experiences are made up of an individual's interpretation of the outcomes of their previous achievements. A successful mastery experience can increase self-efficacy when someone experiences direct success with a challenging task (Moola et al., 2008; Pajares, 2006). An example in PE would be a student challenging themselves within a walk/jog unit to jog a mile under a certain time. If they complete the jog under their time this will most likely increase the student's self-efficacy for jogging. The opposite would also be true of a failure potentially lowering self-efficacy. For example, if the student in the previous example jogged in a far slower time than the set goal, this might lower the student's jogging self-efficacy. In both examples above, the interpretation of the results would influence the student's self-efficacy. For example, in the first scenario, the student might believe after the jog that the goal was too easy, which results in no change to self-efficacy. For the second example, if the student believed they did not meet the mile goal because they were not feeling well or because they were not motivated to jog that day, the outcome could have no effect on their self-efficacy.

Vicarious experiences are observations of other people and can involve social comparison (Bandura, 1997; Pajares, 2006). When a person has limited personal experience, they might rely more heavily on the observation of others to form their own

self-efficacy beliefs. Seeing a peer who is similar in abilities perform a task could enhance or hinder self-efficacy beliefs based on the task outcome. For example, a student might have an increase in self-efficacy when observing another student discussing different strategies that they have used to be physically active in a group discussion. Another form of vicarious experience is social comparison. When individuals observe others, they might start to compare their abilities to the abilities of those they observe. This naturally happens in competition and games that are typically used within PE. As was the case with mastery experiences, the individuals' interpretation of their observations can influence their self-efficacy beliefs. For example, if a person feels that they are highly skilled compared to others based on their observations, this could increase self-efficacy.

Social persuasion are the words or actions of others like a student's peers, family, or teachers (Bandura, 1997). Some different types of social persuasion commonly used are feedback, encouragement, and non-verbal actions like high-fives. These messages can positively influence motivation or can work in the opposite direction and be disheartening (Pajares, 2006). For example, a student who is provided negative feedback after performing a PA skill might experience a decrease in self-efficacy for that task. On the other hand, positive feedback can assist a student in identifying the positive in an unsuccessful attempt, which might prevent a decline in that student's self-efficacy beliefs. Encouragement can also influence self-efficacy beliefs. When a student is unsuccessful, a teacher can encourage the student to keep trying and emphasize that effort and persistence will eventually lead to success. The social persuasion of family and peers

can be just as influential to an individual's self-efficacy beliefs. Social persuasion can influence how students interpret their PA experiences and skill levels in PE.

The last source of self-efficacy is physiological and emotional states (Bandura, 1997; Pajares, 2006). Feelings such as anxiety and moods can influence self-efficacy beliefs based on how an individual interprets these feelings to their competence to perform a task. In most cases, a positive mood will increase self-efficacy and negative feelings like depression and anxiety will decrease self-efficacy. Negative feelings might cause a person to believe that they do not have the capability to complete a task. For example, when a student is running a mile and feel out of breath this might lower their beliefs in their capabilities to run. Alternatively, the student's self-efficacy might not be affected if the student understands that heavy breathing is a natural reaction to intense running. A person's interpretation of their physiological and emotional states can either enhance or diminish self-efficacy (Pajares, 2006).

#### 1.1.5 Physical Activity Self-Efficacy

PA self-efficacy is a person's beliefs about their capability to be physically active despite barriers (Voskuil & Robbins, 2015) and is a key determinant in increasing PA (Bauman et al., 2012). A review by Voskuil and Robbins (2015) concluded that increasing students' PA self-efficacy can have positive consequences on PA. Van der Horst et al. (2007) found that 14 out of 17 studies reporting adolescents' PA self-efficacy positively associated it with PA (Van der Horst et al., 2007). Several studies that focused on increasing children's PA self-efficacy in afterschool programs had significant correlations between PA self-efficacy and self-reported PA (Annesi, 2006; Annesi et al., 2008). Ross et al. (2013) found that middle school girls who had higher levels of

objectively measured PA also had higher levels of PA self-efficacy compared to girls with lower levels of PA. In a systematic review of factors affecting PA, having higher PA self-efficacy can lead to lower declines in PA as students age (Craggs et al., 2011). Greater PA self-efficacy can also result in more participation in structured PA outside of PE (Barr-Anderson et al., 2007) and moderate to vigorous PA in high school students (Voorhees et al., 2011). Increasing students' PA self-efficacy can also result in increases in effort, enjoyment, and maintenance of PA (Annesi, 2006; Gavin et al., 2016; Jackson et al., 2012). Lower levels of PA self-efficacy can lead to a decrease in motivation to be active (Corr et al., 2019). Since PA self-efficacy is changeable, interventions can be implemented in PE that can increase PA self-efficacy (Annesi et al., 2007) and can also lead to a rise in PA (Darker et al., 2010).

According to social cognitive theory, PE is an environmental factor that interrelates with students' personal factors and can influence what behaviors students engage in (Bandura, 1997; Schunk & BiBenedetto, 2020). PE teachers can design and put into practice PA experiences that can affect learners' motivational processes such as self-efficacy and social comparisons that can then influence learners' choices and effort (Annesi et al., 2007; Bennie & Langan, 2015; Gavin et al., 2016; Schunk & BiBenedetto, 2020). For example, a PE teacher could provide a student with feedback (environmental factor) on how well that student performed a skill during practice which causes an increase in that students' self-efficacy (personal factor) and motivates the student to continue practicing the skill (behavior). PE teachers also primarily decide what PA behaviors students participate in and how the PA experiences are designed (Bennie & Langan, 2015). These external influences continuously interact with learners' personal

factors and can affect future actions with PA. Examining the different environmental factors that PE teachers used to support learners' PA self-efficacy can guide best practice and future research.

## 1.2 Statement of the Problem

Research has shown that student PA tends to decline as students age (Cooper et al., 2015; Metcalf et al., 2015; Troiano et al., 2008). PE has functioned as a PA intervention (environmental factor) and implemented PA experiences to increase students' PA and PA self-efficacy (Annesi et al., 2007; Chase et al., 2018). Most of the research on how to support PA self-efficacy came from outside-of-school interventions (Annesi, 2006; Burke et al., 2015). There was limited research that provided examples of how PE supported students' PA self-efficacy, teachers' rationales for their decisions in PE, and teachers' perceptions of students' PA self-efficacy.

## 1.3 Purpose and Significance of the Study

The purpose of the study was to examine and provide examples of PE practices in high school PE that support students' PA self-efficacy through in-person and online instruction. Research into the development of students' PA self-efficacy is important because of the positive correlation commonly found between PA self-efficacy and PA (Annesi, 2006; Burke et al., 2015; Van der Horst et al., 2007). PE has the potential to increase students' PA self-efficacy and there was limited research that has examined PE practices that support students' PA self-efficacy and asked PE teachers about their perceptions on how to increase students' PA self-efficacy in PE (Annesi et al., 2007). This study identified and explained current PE practices to support students' PA self-

efficacy in an attempt to guide future PE practices and future research into supporting students' PA self-efficacy in PE.

#### 1.4 Research Design and Questions

This study attempted to describe practices and examples of how some high school PE teachers are trying to support PA self-efficacy with in-person/online instruction based on the four sources of self-efficacy. Teacher interviews allowed participants to explain their rationale for decisions and describe their beliefs on how students' PA self-efficacy is developed. Lastly, the study compared the described PE practices to the literature on how to increase student PA self-efficacy and compared in-person (pre-pandemic) practices to online (during pandemic) practices. Research questions included:

1. According to the PE teachers, what were students' PA self-efficacy beliefs and how were they developed?
2. How were high school PE teachers trying to support students' PA self-efficacy through in-person and online instruction based on the sources of self-efficacy?
3. What were teachers' rationales for the decisions they made when trying to support students' PA self-efficacy?
4. Do the described PE practices and teachers' rationales align with literature on how to increase student PA self-efficacy?
5. What were the similarities and differences of the in-person/online PE experiences that the teachers were using to increase students' PA self-efficacy?



## 1.5 Chapter Guideline

The remaining chapters of this dissertation are as follows: literature review (chapter 2), study methods (chapter 3), results (chapter 4), and discussion (chapter 5). The literature review identified descriptive practices used to support PA self-efficacy in the research. This information highlighted recommended practices to increase PA self-efficacy in PE and gaps in the research, which gave evidence for the need for the current study. The methods chapter (3) thoroughly explained the study participants, design, and analysis used in this study. Interview results were separated by in-person and online practices within chapter 4. The final chapter (5) provided a discussion of the results. Based on these results, strategies and practices for teachers to use both in-person and online to support students' PA self-efficacy were provided along with recommendations for future research.

## CHAPTER 2. LITERATURE REVIEW

PA levels have been found to be positively associated with higher levels of PA self-efficacy (Annesi et al., 2005, Burke et al., 2015; Jamner et al., 2004; Murray & Tenenbaum, 2010; Teerarungsikul et al., 2009). Given the known benefits of regular PA, it follows that strategies for improving student PA self-efficacy are warranted. PE has been identified as a potential source for increasing student PA self-efficacy. With the current pandemic and the increase in online PE offerings, a better understanding of the complexities of improving PA self-efficacy in any PE climate is needed. This chapter provides a review of each source of self-efficacy and examines described in-person/online practices to support PA self-efficacy. The emphasis was on how in-person and online interventions/programs implemented PA opportunities to influence participants' interpretations of their mastery experiences, vicarious experiences, physiological/emotional states, and how social persuasion was provided. This chapter also provided a review of research on teachers' perceptions of the PE practices they used. The objectives of the review were to establish best practices to support PA self-efficacy and identify gaps in the literature. The provided best practices were then used to write the research design (chapter 3), results of the study (chapter 4), and discussion (chapter 5). The findings from this review will support the need for more research that provides in-person/online examples of how high school PE teachers are attempting to support PA self-efficacy.

## 2.1 Implemented PA Opportunities to Influence Students' Interpretation of Their Mastery Experiences

It is hypothesized that students' interpretation of their mastery experiences (previous performances) is the most powerful source of self-efficacy (Bandura, 1997). How students interpret their direct experiences with PA as successful or unsuccessful can therefore influence their PA self-efficacy beliefs. Warner et al. (2014) found that PA self-efficacy was significantly and positively predicted by mastery experiences in older adults. PE offers an excellent opportunity to develop students' PA self-efficacy through successful experiences with different PA tasks (Loprinzi et al., 2015). To assist with student success, PE teachers can ensure that tasks are at an "accomplishable level of difficulty" (Pajares, 2006, p. 344). This suggests that tasks be modified so that students can be successful with effort. Youth sport athletes identified that having success with modified practice opportunities helped increase self-efficacy beliefs (Saville et al., 2014). One study found that when adolescents experience success with challenging PA tasks, including different sports and non-competitive PA, it is more likely that their PA self-efficacy will increase (Moola et al., 2008). Alternatively, when students experience repeated failure, it could decrease their self-efficacy, which then acts as a barrier to PA (Corr et al., 2019). Robbins et al. (2010) found that adolescent students desired more mastery opportunities to develop competence for different PA skills in PE. These findings support the notion that PE teachers design modifications for activities and allow students to choose how they want to participate to assist students in experiencing success with different forms of PA (Power et al., 2010; Warner et al., 2014). Students having success with PA at an appropriate level of challenge can increase perceived competence,

result in positive emotions about PA, and increase PA self-efficacy (Leisterer & Jekauc, 2019; Moola et al., 2008; Saville et al., 2014).

Mastery experiences can also include students having success with learning different PA content knowledge such as the benefits of PA and different PA behavioral skills like goal setting, progress monitoring, and action planning (Annesi, 2006; Martin et al., 2009). Williams and French (2011) found that interventions that provided instruction related to action planning were more often significantly associated with higher PA self-efficacy effect sizes for adults. Specifically planning when, where, and how to be physically active led to higher levels of PA self-efficacy. Several studies demonstrating a positive impact on PA self-efficacy have focused on increasing participants' PA knowledge, goal setting, and progress monitoring (Annesi, 2006; Annesi et al., 2007; Burke et al., 2015; Teerarungsikul et al., 2009). Incorporating different self-monitoring and PA self-regulation strategies can also assist PE students with having success with increasing PA (Chase et al., 2018; Horne et al., 2009). Teaching students time management techniques can also support students' feelings of control of their PA time and can increase students' beliefs that they can be successful with the obstacles of PA (Olander et al., 2013). Luszczynska et al. (2010) recommended that students first experience success with PA and then be given self-regulation strategies to assist in overcoming barriers since planning is more likely to result in PA when a person's PA self-efficacy is higher. To assist in the development of PA self-efficacy, it is recommended that students participate in various PA opportunities, learn PA content knowledge, and engage in PA management skills like goal setting and progress monitoring (Annesi, 2006; Annesi et al., 2008; Annesi et al., 2005; Martin et al., 2009;

Trost et al., 1999). The review below examines how different studies have implemented PA opportunities, PA content knowledge, and PA management skills within in-person and online instruction. This information provided evidence of best practices to increase PA self-efficacy and gaps within the research.

### 2.1.1 In-Person PA Opportunities

To foster PA self-efficacy, it is recommended that students experience success with a variety of PA opportunities which can include different sports, cardiovascular activities, resistance training, low-intensity PA like walking, and other non-competitive activities (Trost et al., 1999). Two programs that had success with increasing PA self-efficacy are the Fit for Life program (Annesi, 2006; Annesi et al., 2008; Annesi et al., 2005) and the Children's Health and Activity Modification Program (Burke et al., 2015; Martin et al., 2009). Both studies were for children (5-14 years old) and were not implemented in PE, except for the study by Annesi et al. (2007). These outside-of-school programs described participants PA opportunities that included engaging in various forms of non-competitive PA. Some examples of activities included practicing different manipulative movements through team sports (soccer) and participating in dance and other team building activities at varying movement intensities. Both programs also had students participate in resistance training with exercise bands. As described by the Fit for Life program, participants performed different exercises three times, trying to do ten repetitions each time. The study pointed out that a benefit of using the exercise bands is that it allowed children to choose the amount of resistance they wanted to use. At times, the participants in the Children's Health and Activity Modification Program (CHAMP) were able to choose the PA that they participated in to increase a sense of autonomy.

These studies provided participants with a range of PA experiences to teach the children different ways to be physically active but lacked details on how they designed some of the other practice opportunities (manipulative skills). These studies were also designed with the intent of assisting children in having a positive interpretation of their mastery experiences with PA. Outside of the study by Bennie and Langan (2015) below, it is unclear from the research if PE teachers design activities with the same objective.

The study by Bennie and Langan (2015) provided examples of how PE teachers were putting into practice PA opportunities for students. The study interviewed high school PE teachers in Australia to examine how teachers were attempting to increase PA in PE. The findings identified that most of the teachers reported having students practice skills before going into gameplay, which is a recommended way to increase competence (Gallahue & Ozmun, 2006). However, the practice they described involved students completing drills while standing in lines, which would not be a recommended way to have students be active for 50% of class time (Powell et al., 2016). The PE teachers in the Bennie and Langan (2015) study acknowledged that this type of practice would decrease PA but were still willing to use it. Teachers in the study also believed that the students were more motivated to be physically active by gameplay than practice. This resulted in teachers designing more small-sided/modified games for students, which can increase student success. Students were also offered choices and free play to increase students' motivation to be physically active. The findings from this study provided a limited perspective of the strategies PE teachers used to increase PA and their reasons for their actions. By identifying practices that are being used in PE and the rationale behind them, advances in teacher behaviors designed to increase PA self-efficacy can be made. There

is limited research that provides examples of PA opportunities implemented in high school PE in the United States and teachers' rationale for their decisions.

### 2.1.2 Online PA Opportunities

Research has found that online PE has both advantages and disadvantages for providing students with PA opportunities. For example, high school teachers in Japan explained that they were limited in the PA opportunities that they could provide to students during the pandemic (Jeong & So, 2020). This was due to students having limited equipment and space for PA at home. The teachers also mentioned that student participation was low during online learning. For these reasons, the teachers had to adjust the PA opportunities that they provided for students to participate in. The activities changed from competitive activities to more health and PA challenges. The study did not provide details of the PA challenges that students were given. Teachers also described the challenge of having to change how they evaluate PA during online learning but did not describe how their evaluation of PA changed.

Despite the limitations of online PA opportunities, high school students who were enrolled in online PE before the pandemic described some advantages to online PE (Williams et al., 2020). These students enjoyed being able to select their own PA based on their interests and felt that the PA opportunities that they were provided were more personalized to them. A strength of online PE is it can provide students with PA choices to participate in (Carone Learning, n.d.). A current online PE program advertised that students could choose to participate in different PA classes such as walking fitness, strength training, group/individual sports, or outdoor sports (Carone Learning, n.d.). This online course described providing students with a video library of different PA videos

that students can participate in for their daily PA. Students in the Carone Learning (n.d.) online PE program were held accountable for participating in weekly PA (3 hours a week) by either tracking their PA with heart rate monitors/pedometers or by having a parent sign off on the student's PA. The online PE course also described having students submit videos of themselves to show movement competence. When students signed up for a class that required them to demonstrate movement competence with equipment (basketball dribbling), they were permitted to substitute other pieces of equipment so that they could still practice the skills within the class. Overall, this online program presented examples of the PA opportunities that students are offered, but little is known about how current PE programs, which were forced online by the pandemic, have provided these experiences.

### 2.1.3 In-Person Experiences for PA Content Knowledge and PA Management Skills

Both the Fit for Life and CHAMP interventions described participants learning about the benefits of PA and participating in PA management skills (Annesi, 2006; Martin et al., 2009). To facilitate mastery experiences with PA content knowledge and PA behavioral skills, the participants in the CHAMP intervention were placed in small groups (Martin et al., 2009). Within their groups, they learned about PA through educational sessions and practiced goal setting with progress monitoring. Goal setting involved participants creating both group and individual goals for PA to be completed while at camp and while at home. To assist with creating goals, the participants had an information session about goal setting where they learned that goals should be specific, measurable, attainable, realistic, and time-based (S.M.A.R.T.). Participants also created activity logs to monitor their progress, which had to be initialed by parents every night.



As groups progressed through their goals, they filled in a map measuring how far the group as a whole traveled. To assist with individual accountability for goals, the students wrote their goals in individual “passports.” The program allowed students to have success with learning about PA, setting effective goals, and progress monitoring. Similarly, participants in the Fit for Life interventions completed workbooks to assist students in learning the benefits of PA and progress monitor their PA goals (Annesi, 2006). Within the workbook, children created goals that fit on a walking path, which they filled in as they progressed with their goal through self-monitoring.

Within PE, two studies described how they used goal setting and progress monitoring successfully for elementary aged students (Chase et al., 2018; Horne et al., 2009). In one study, PE students that were given a step goal of reaching 2,000 steps each lesson had significantly more steps than the group who were not given a goal (Chase et al., 2018). Horne et al. (2009) found that elementary PE students who were given a goal to accumulate 1,500 more steps than their average step count at intervention and given a daily reward if successful had significantly more steps than the control group during the intervention. Outside of targeted interventions to implement PA management skills and PA content instruction, there is limited research that provides examples of how PE teachers are using these strategies. Also absent in the research is information on how frequently these practices are being put into practice by high school PE teachers.

#### 2.1.4 Online Experiences for PA Content Knowledge and PA Management Skills

As described on the Carone Learning (n.d.) website, the online PE program designs opportunities for students to learn PA content knowledge, create personalized PA goals, and monitor/evaluate their PA program. The online program described that

students learn about PA content knowledge through self-guided lessons. This included different videos, texts, and pictures to assist students in learning about PA content knowledge. The online program explained that students demonstrate an understanding of content knowledge (components of fitness) by completing assignments, quizzes, and tests. One described assignment is that students design their own PA plan using the FITT (frequency, intensity, time, type) principle. The Carone Learning (n.d.) online PE program also described experiences that allow students to participate in different PA management skills. For example, students monitor initial physical fitness levels, create individualized goals for improvement, design exercise programs, and monitor progress towards their goals. The program also described that students complete fitness logs to track PA and heart rate. Students also used journaling to self-reflect on their PA and potential barriers to PA. These types of PA management experiences were found to be enjoyable by some students who were enrolled in online PE before the pandemic in the Williams et al. (2020) study. This study also reported that some students did not benefit from the autonomy of completing assignments at their own pace while online. For example, some students struggled with time management and believed online PE resulted in more content knowledge instruction than in-person PE. This resulted in some students not turning assignments in on time and keeping pace with the class assignments.

Online learning has also been used to support PA self-efficacy for middle school PE students within an in-person PE class. For example, Murray and Tenenbaum (2010) found that students' PA self-efficacy increased when they completed computer modules while also taking in-person PE. In the modules that were spread out over five weeks, the students learned about the importance of exercise, participated in fitness assessments,

created individual fitness goals/plans, and logged their progress towards their goals. When a similar online program was implemented with adults with type 2 diabetes, this resulted in a significant increase in objectively measured PA (Kooiman et al., 2018). The online program provided participants with weekly information to increase participants' PA knowledge. Participants were also provided with technology to track their daily PA in an attempt to increase participants' awareness of their PA levels. To support exercise self-efficacy, participants set attainable goals that were based on their initial measurements of their PA. The program attempted to assist participants in action planning for PA by providing information on the barriers to PA and strategies to increase PA in their normal daily routines. These studies offered examples of how to put into practice online learning experiences for PA content knowledge and PA management skills that can influence PA self-efficacy and PA (Kooiman et al., 2018; Murray and Tenenbaum, 2010). Further research is needed to better understand how PE teachers have designed/implemented PA content instruction and PA management skill experiences online during the pandemic.

## 2.2 Implemented PA Opportunities to Influence Students' Interpretation of Their Vicarious Experiences

Vicarious experiences are individual's interpretations of their observations (Bandura, 1997). One type of vicarious experience in PE is social modeling which involves observations of other students or teachers (Bandura, 1997). A meta-analysis found interventions that used social modeling experiences to increase PA self-efficacy had larger effect sizes than the interventions that did not (Ashford et al., 2010). Interviews with older adults found that when they observed other similar older adults'

experiences with PA, it increased their PA self-efficacy (Kosteli et al., 2016). Gavin et al. (2016) had a high school student explaining another student's abilities and the amount of practice and effort that student used to be successful. Based on the observation, the student understood that effort and practice could also lead to their success, which increased their self-efficacy (Gavin et al., 2016). Family members and PE teachers can also model ways to be physically active to support PA self-efficacy (Azar et al., 2009; Carlin et al., 2015; Welk, 1999). Based on the findings, providing students with numerous chances to observe others be successful can be beneficial to students' PA self-efficacy (Gavin et al., 2016; Kosteli et al., 2016).

When students observe someone through a vicarious experience, they may compare their skill level to that person through social comparison (Bandura, 1997; Carlin et al., 2015; Usher, 2009). In a review of qualitative studies that focused on adolescent girls' perceptions of PA, it was found that adolescents' self-efficacy beliefs could decrease when students believed that they have lower abilities compared to others (Corr et al., 2019). Student interviews in the study by Carlin et al. (2015), found that middle school students who thought their competence was lower than other students felt self-conscious about their abilities. Further, these findings also suggested that social comparison resulted in a negative influence on PA. In another study, when older adults were interviewed, researchers found that adults who compared themselves to people of higher ability than themselves had a decrease in their PA self-efficacy (Kosteli et al., 2016). In these examples, the participants were making comparisons to peers of a similar age. Students comparing themselves to peers more than adults (PE teacher/parents) was found in a qualitative study of middle school students in a math class (Usher, 2009). Peer

social comparison was also more likely to occur when PE students were participating in competitive activities against each other (Corr et al., 2019). Competition in PE could raise adolescents' awareness of their abilities, which could result in negative student feelings (Lodewyk & Muir, 2017; Corr et al., 2019). Interviewed adolescents wanted more non-competitive forms of PA which can assist in the facilitation of social comparison and positively impact PA (James et al., 2018; Olander et al., 2013). Students' observations and judgments of their own abilities compared to other students' abilities can influence self-efficacy in positive or negative ways (Carlin et al., 2015; Usher, 2009). Reviewing how different studies have implemented observations in-person and online can lead to a better understanding of how to increase PA self-efficacy in PE.

### 2.2.1 In-Person Observations

An example of a vicarious experience could be students observing peers who are similar to them in capabilities experience success with PA with sustained effort (Bandura, 1997; Pajares, 2006). For example, youth sport participants said that observing physical demonstrations from coaches and peers increased their self-efficacy (Saville et al., 2014). The youth sport participants also acknowledged that being asked to demonstrate PA skills to peers increased their self-efficacy for that task. Based on this study, it might be beneficial to have both teachers and peers model PA in PE. In another example, sixth-graders who watched a video of a skilled/successful model had higher self-efficacy before and after performance with the task than the students who watched an unskilled/unsuccessful model on video (Lirgg & Feltz, 1991). This suggests that PE teachers should model successful attempts with PA to help support students' PA self-efficacy.

Facilitating group discussions can also help support PA self-efficacy (Annesi, 2006; Burke et al., 2015). Both the Fit for Life program and CHAMP interventions had participants share experiences with PA in group discussions (Annesi, 2006; Martin et al., 2009). As described in the CHAMP study, these group discussions allowed participants to discuss the different challenges and successes that they experienced with PA (Martin et al., 2009). They were also afforded the opportunity to reflect on how fun/difficult activities were and how the information provided could be applied at home. These discussions allowed participants to observe how their peers overcame barriers to PA, which could potentially have assisted in the increase of PA self-efficacy. Both programs also had instructors and peers model PA to help support PA self-efficacy (Annesi, 2006; Burke et al., 2015). There is limited research that describes how group discussions would be put into practice within a PE class and PE teachers' willingness to implement group discussions.

At times, limiting student observations of other students in PE might limit the possibility of students making social comparisons to each other. Bennie and Langan (2015) might have decreased the chances of students making social comparisons to each other by having all students play in small-sided games at the same time. This would be the opposite of having one big game that includes all students participating in that game at the same time. In this situation, all students could be paying attention to what is happening in that game and increase the feelings of social comparison. High school females described feeling self-conscious when they felt others were watching them participate in physical activities like fitness testing and team sports (Lodewyk & Muir, 2017). The high school females also had significantly more social physique anxiety

during fitness testing and this was negatively related to self-efficacy and enjoyment. Ridgers et al. (2007) found that high school females in England had an increase in fear of negative evaluations from others (peers/teachers) as they age. The authors recommended that PE activities encourage success and limit public performance of PA skills in competition since competition can increase evaluations by other students. Most studies offered recommendations, but few described practices in PE to help limit social comparison. Further research could assist in understanding PE teachers' perceptions of social comparison and how this influences the activities they design.

### 2.2.2 Online Observations

Some examples of how online programs provided PA observations/demonstrations to students/participants is through online videos and pictures (Carone Learning, n.d.; Kooiman et al., 2018; Murray & Tenenbaum, 2010). Students taking online PE before the pandemic also enjoyed the online social interactions with other students and listening to other students' experiences with PA (Williams et al., 2020). These online PE discussions were facilitated through group discussions and discussion board posts. Some students described feeling more comfortable sharing personal information online because they felt less judgment from their peers than when in person. The students also acknowledged that they liked participating in PA with nobody watching. This eliminated social comparison from peers during PA. The Carone Learning (n.d.) online PE program described students having to turn in personal videos to their instructors which eliminates peer social comparison. It is not well known from the research how current PE teachers that have had to transition to online learning during the pandemic have put into practice PA observations for students.

### 2.3 Implemented Social Persuasion to Influence PA Self-Efficacy

According to Bandura (1997), the third source of self-efficacy is social persuasion. These are the words or actions of others and considered a key antecedent of PA self-efficacy (Murray & Tenenbaum, 2010). Individuals' interpretations of social persuasion can increase/decrease self-efficacy beliefs, which is why positive social persuasion is recommended (Usher, 2009). One study found that middle school students' PA self-efficacy was significantly associated to support from teachers, friends, and parents (Zhang et al., 2012). Furthermore, youth sport participants explained that their instructors, peers, and parents can influence the participants' development of their self-efficacy beliefs (Seville et al., 2014). College athletes identified positive talk from coaches as the most effective technique for increasing self-efficacy (Vargas-Tonsing et al., 2004). PA self-efficacy was also significantly and positively predicted by self-persuasion/positive self-talk ("I can do it") in older adults (Warner et al., 2014). PE students can be provided with social persuasion through different verbal and nonverbal interactions such as feedback, encouragement, and individualized attention, along with being encouraged to use positive self-talk (Seville et al., 2014; Warner et al., 2014; Zhang et al., 2012).

Feedback can be used to reinforce progress towards a behavior (Williams & French, 2011). Research suggests that students could be offered private individual feedback that is positive, informational, and reinforces effort, which can influence perceived competence and overall self-efficacy (Leisterer & Jekauc, 2019; Williams & French, 2011; Zhang et al., 2012). Gavin et al. (2016) concluded that high school students who received positive feedback about performance were more likely to pursue different forms of PA. Positive feedback can also be combined with self-monitoring to identify



growth or development towards a goal. This may turn an unsuccessful action into a mastery experience based on the individual's interpretation. Feedback can also assist individuals in understanding the parameters of a successful experience with a task (Seville et al., 2014). Influential feedback can be provided by teachers, parents, and other peers (Gavin et al., 2016; Seville et al., 2014; Usher, 2009; Zhang et al., 2012).

Social persuasion can also come in the form of encouragement, which can promote effort and self-improvement, provide support, and normalize failure (Bandura, 1997; Pajares, 2006; Seville et al., 2014; Zhang et al., 2012). Positive encouragement can be provided by teachers, family, and peers (Hamilton et al., 2017; Peterson et al., 2013; Usher, 2009; Zhang et al., 2012). Teachers can encourage effort and highlight perseverance as “ways to overcome obstacles” (Pajares, 2006, p. 350; Zhang et al., 2012). Students can also be encouraged to focus on self-improvement instead of comparing their abilities to others, which might help to lower the feelings of social comparison (Zhang et al., 2012). Encouragement can also be used to support students in being physically active. For example, parental support was found to assist adolescents in overcoming PA barriers and was associated with increased PA (Peterson et al., 2013). Social persuasion from support groups like peer mentoring groups can also support students in overcoming PA obstacles (Olander et al., 2013; Whitehead & Biddle, 2008). For example, first-year high school students with low PA self-efficacy had more intention to be physically active if they reported having more friend support (Hamilton et al., 2017). Furthermore, one study found that middle school students' friend support was a better predictor of PA than support from family and the PE teacher (Zhang et al., 2012). In these examples, having social support may result in more PA than not having social support. Planning out social

support can also assist with coping with setbacks and PA relapses (Olander et al., 2013). For instance, combining parental/peer support with action planning might assist in an increase of PA self-efficacy in PE (Burke et al., 2015). Encouragement could also emphasize that failure is a normal part of learning (Pajares, 2006; Zhang et al., 2012). Assisting students in understanding that learning is a process and that mistakes are a part of the learning process can help support self-efficacy when students are unsuccessful with a task. Providing students with positive social persuasion from different people can assist in developing self-efficacy and encourage more PA (Annesi, 2006; Burke et al., 2015; Zhang et al., 2012).

### 2.3.1 In-Person Examples of Social Persuasion

Both the CHAMP and Fit for Life interventions provided participants with different forms of social persuasion like rewards, encouragement, and feedback to encourage participants to be physically active and support PA self-efficacy (Annesi, 2006; Burke et al., 2015; Martin et al., 2009). For example, instructors in the CHAMP intervention encouraged participants to reach their PA goals by rewarding and praising participants when they completed their goals (Martin et al., 2009). The participants and instructors also created signs of encouragement that the participants would place around their homes to motivate the students to complete their goals outside of the camp. To encourage positive self-talk, at the end of each day the participants documented three successful experiences. Similarly, participants in the Fit for Life intervention journaled mean statements that they would say to themselves and had to positively reframe them to facilitate positive self-talk (Annesi, 2006). CHAMP participants were also put into groups to encourage social support. The groups completed team building activities that

involved groups creating team names, logos, cheers, and flags. Participants were encouraged to give each other high-fives and positive encouragement while engaged in physical activities. The CHAMP intervention also used weekly parental educational sessions to help increase family support for participant PA. The parental sessions also allowed parents to get to know each other and create family PA goals. After the completion of the program, there were sessions offered once every two months that allowed for the children and parents to get together and socialize, review important information about PA, and have time for children and parents to engage in PA together. Allowing time for socialization was an attempt to create different PA support groups, which has been linked to an increase in PA (Fitzgerald et al., 2012).

Research also provides examples of how social persuasion can be provided to PE students and athletes to increase PA and support PA self-efficacy. For example, to assist students in reaching their step goals, the PE teachers in the Chase et al. (2018) study used verbal encouragement and placed signs with step targets around the gym. Youth sport participants explained that general encouragement (“you got this”), verbal instruction (“keep your eye on the ball”), individualized instruction, and high-fives from their coaches helped to increase self-efficacy to accomplish a task (Seville et al., 2014). The youth sport participants also felt more confident when they received praise from their coaches or teammates. Zhang et al. (2012) recommended that positive encouragement and constructive feedback be provided to PE students by peers. Some PE teachers explained that they would try to accomplish this by pairing certain students together for activities (Bennie & Langan, 2015). Zhang et al. (2012) also suggested that teachers attempt to increase social support by developing positive relationships with students and

student relationships with other students. Youth athletes also described their coaches' facial expressions and tone of voice as potential influences to self-efficacy (Seville et al., 2014). Outside of PE, Zhang et al. (2012) recommended that parents provide their children with positive feedback about their children's abilities to help support PA self-efficacy. There is adequate research that provides examples of how interventions have attempted to support PA self-efficacy with social persuasion. More research is needed to identify which of these practices are commonly put into practice in high school PE and to describe examples of how different forms of social persuasion are provided to students.

### 2.3.2 Online Examples of Social Persuasion

Several examples were found that describe how encouragement, feedback, and interactions with students/teachers were provided online. For example, Japanese PE teachers found it difficult to provide students with encouragement and feedback during the pandemic (Jeong & So, 2020). They said the encouragement and feedback they provided to students was delayed. This meant that the feedback/encouragement was not provided to students while they were participating in PA. The teachers also described the lack of interaction between teachers and students during online PE. For these reasons, teachers believed that this made it difficult to convey the value of PA to their students. The Carone Learning (n.d.) website described several ways to encourage students to be physically active and possibly connect with students online. The website described sending students reminders for assignments, offering to meet with students live online, and communicating with students through email or telephone. Online reminders were also used to help middle school students who were completing online modules to increase PA self-efficacy (Murray & Tenenbaum, 2010). For example, students were reminded by

the computerized teacher to use their personal goals when creating their fitness logs. Another proposed strength of online PE is personalized and constructive feedback (Carone Learning, n.d.). Students taking online PE before the pandemic explained that they enjoyed the personalized feedback that they were provided online by their teachers (Williams et al., 2020). One study of college students enrolled in online classes found that there was a positive association between the amount of regular feedback provided by teachers and students' outcome expectations and levels of reported mastery (Bates & Khasawneh, 2007). Based on this information, it would be beneficial to provide students with consistent and personalized feedback while online. There is limited research on how current high school PE teachers are providing social persuasion to students online during the pandemic. More research is needed to understand how teachers are providing feedback, encouragement, and building positive relationships with students while online.

#### 2.4 Implemented Practices Influence on Students' Interpretation of Their Physical and Emotional States

The last hypothesized source of self-efficacy is a person's interpretation of physiological and emotional states (Bandura, 1997). Pajares (2006) said that a student's interpretation of their anxiety and moods can either enhance or diminish self-efficacy. The enjoyment or anxiety that students interpret while participating in PA might influence PA self-efficacy and future engagement with PA (Corr et al., 2019; Kosteli et al., 2016). For example, Kosteli et al. (2016) found that participants' main reason for participating in PA was for pleasure. When an activity is interpreted as enjoyable, there is more motivation to do the activity again and this can increase PA self-efficacy (Kosteli et al., 2016). Multiple studies have found that high school students want choices when it

comes to PA in PE and this autonomy could lead to more student satisfaction (Leisterer & Jekauc, 2019; Lewis, 2014; Tudor et al., 2018). Furthermore, Standage et al. (2003) found that the more motivated a student was in PE, the more intention they had of being physically active outside-of-school. Therefore, to help students have an enjoyable experience participating with PA and support PA self-efficacy, students could be allowed to make choices when it comes to being physically active in PE (Lodewyk & Muir, 2017; Trost et al., 1999; Tudor et al., 2018).

When students interpret anxiety during PA, this could have a negative impact on students' PA self-efficacy and future engagement with PA (Carlin et al., 2015; Corr et al., 2019; Standage et al., 2003). A negative emotional interpretation of PA in PE can be caused by lack of student choice, unsuccessful attempts at a skill, or implementation of activities that enhance social comparison (Carlin et al., 2015; Knowles et al., 2011; Robbins et al., 2010; Tudor et al., 2018). Students are not always motivated to be physically active at certain intensities and the lack of choice could have a negative influence on PA (Knowles et al., 2011; Robbins et al., 2010). In a qualitative study examining student perceptions of challenging activities, when students were given a task that they perceived to be too demanding to be successful, this caused stress for some students (Tudor et al., 2018). The same study found that some students said that strict PE teachers made the PA experiences less enjoyable. The authors concluded that students could be offered more choices with how to perform tasks to increase student success and enjoyment. Activities that enhance social comparison through competition and public displays of PA can also cause a negative emotional response and possibly lower PA self-efficacy (Carlin et al., 2015; Corr et al., 2019; Lodewyk & Muir, 2017; Tudor et al.,

2018). Several studies recommended that PE students participate in more experiences that emphasize mastery instead of performance to minimize social comparison and increase student enjoyment (Lodewyk & Muir, 2017; Ridgers et al., 2007; Tudor et al., 2018; Trost et al., 1999).

PE teachers can also assist students in understanding the physiological changes during PA, which might change how they interpret PA and their PA self-efficacy (Kirkpatrick & Birnbaum, 1997; Pajares, 2006; Partridge et al., 2011). Assisting students in understanding the physiological changes during PA is part of the national PE standards (SHAPE America, 2013). A student who does not understand the physiological changes during PA might perceive them as negative. For example, a student might start to breathe heavily and sweat during activity and perceive this as negative if they do not know the body's natural reactions to movement. This negative perception might lower that person's PA self-efficacy. Experiences that help students to accurately interpret physiological changes during PA can increase student understanding and possibly prevent decreases in PA self-efficacy (Kirkpatrick & Birnbaum, 1997; Pajares, 2006; Partridge et al., 2011). Guiding students to better understand how they feel emotionally during the process of PA (before/during/after) and what happens to their body during PA could influence their interpretation of PA experiences.

#### 2.4.1 In-Person Practices that Influence Students' Interpretation of Their Physiological and Emotional States

Described in-person practices to assist participants/students in having an enjoyable experience with PA included providing students with PA choices and limiting activities that enhance social comparison. Both the Fit for Life and CHAMP interventions offered participants choices with PA (Annesi, 2006; Martin et al., 2009). How the choices

were offered or how often the choices were provided were not explained. There was limited research that has examined how student choice with PA has been implemented in PE. Providing examples of how current high school PE teachers manage students' choices with PA can be beneficial. The other commonly stated strategy to increase student enjoyment in PE is to limit competition during PE (Lodewyk & Muir, 2017; Ridgers et al., 2007; Tudor et al., 2018; Trost et al., 1999). To prevent student anxiety during PA, the participants in both the Fit for Life and CHAMP interventions participated in different non-competitive physical activities (Annesi, 2006; Martin et al., 2009). What is not well known in the research are teachers' opinions on how some activities like competition and fitness testing influence students' feelings during PA and how teachers' interpretations of students' feelings during these activities influence teachers' instructional decisions. There were several examples of implemented PE practices that assisted students in interpreting their physiological and emotional states during PA. For example, technology (heart rate monitors) assisted PE students in understanding the changes in heart rate during PA (Kirkpatrick & Birnbaum, 1997; Partridge et al., 2011). Group discussions were also used in the Fit for Life and CHAMP intervention so that participants could share how they felt performing certain physical activities (Annesi, 2006; Martin et al., 2009). Further research can identify if these practices are commonly used in PE.

#### 2.4.2 Online Practices that Influence Students' Physical and Emotional States

A perceived benefit of online PE is that students have more choices with PA and there is no social comparison amongst students (Carone Learning, n.d.; Williams et al., 2020). For example, the Carone Learning (n.d.) webpage described that students can



choose their PA that they will participate in weekly. Students also get the chance to better understand their physiological changes during PA by tracking their heart rate with or without technology in activity logs. The online PE program did not describe any reflection assignments to help students to reflect on their emotional states during the process of PA. There is limited research on how current PE teachers have attempted to increase student enjoyment and limit student anxiety during the pandemic. More research is needed to examine how current PE teachers are implementing student choice with PA, designing activities to limit social comparison, and putting into practice experiences to assist students in understanding their physiological and emotional states during PA.

## 2.5 Teachers' Perceptions on Implemented PE Practices

The study by Bennie and Langan (2015) interviewed Australian high school PE teachers about their teaching practices to increase PA in PE and their rationale for their decisions. They found that most teaching decisions were based on the teachers' personal philosophy that was shaped by their own previous experiences in organized sports and PE. Teachers also considered student characteristics like interest, enjoyment, and motivation when deciding what activities to use. School policies were also identified by teachers in the study as influencing some teaching decisions. The study by Bennie and Langan (2015) asked about PE practices that could increase PA and not PA self-efficacy. There are limited studies that asked teachers about their practices to increase PA self-efficacy and their rationale for those decisions. It is recommended that more qualitative research be done to better understand teachers' perceptions of their decisions that they make in PE (Bennie & Langan, 2015; Dudley et al., 2012).

## 2.6 Summary of Literature Review

This literature review examined the hypothesized four sources of self-efficacy and how different experiences within PE can influence students' interpretation of those sources. In-person and online examples of described best practices to support PA self-efficacy were provided. The majority of these examples came from an existing online PE program and outside-of-school interventions. Explained throughout the review is that more research is needed to examine what practices are currently being used in high school PE, why teachers are making those decisions, how those practices align to recommended practices, and how described in-person and online practices are compared to one another. The information from this review was used to create the research design for the study. Chapter 3 described the research design that included a description of the participants, recruitment, study design, and analysis. The results in chapter 4 provided a summary of which PE teachers are implementing recommended practices to support PA self-efficacy and examples of how teachers are putting into practice recommended PA experiences for both in-person and online instruction. This led to a better understanding of which best practices are being used consistently, occasionally, and rarely. The results provided the information needed to compare current PE practices to recommended practices to support PA self-efficacy and in-person practices to online practices in chapter 5.

## CHAPTER 3. RESEARCH METHODS

### 3.1 Introduction

This qualitative case study described practices and examples of how some high school PE teachers supported students' PA self-efficacy with in-person and online instruction based on the four sources of self-efficacy. The study used semi-structured interviews that allowed teachers to explain their daily practices and rationale for those practices. The results provided teachers' opinions on their students' PA self-efficacy and teachers' thoughts on how PE can influence students' PA self-efficacy. The teacher interviews also provided examples of how some current PE teachers have implemented best practices to support PA self-efficacy through in-person (pre-pandemic) and online (during pandemic) instruction. These data were used to compare current practices/teachers' rationale to recommended practices to support PA self-efficacy and compare in-person to online instruction. The research questions answered within the study include:

1. According to the PE teachers, what were students' PA self-efficacy beliefs and how were they developed?
2. How were high school PE teachers trying to support students' PA self-efficacy through in-person and online instruction based on the sources of self-efficacy?
3. What were teachers' rationales for the decisions they made when trying to support students' PA self-efficacy?
4. Do the described PE practices and teachers' rationales align with literature on how to increase student PA self-efficacy?

5. What were the similarities and differences of the in-person/online PE experiences that the teachers were using to increase students' PA self-efficacy?

### 3.2 Participants

The study participants were 14 (8 female/6 male) current high school PE teachers who have taught high school PE in the United States for at least three years (Table 1). Implementing the selection criteria of at least three years of teaching high school PE ensured that all participants had experience teaching both in-person and online high school PE for one year each. The participants represented nine different states in the United States and taught at different public schools. Further participant background information is provided in Table 2. Recruitment of participants occurred at three different phases and continued until at least 6 male and 6 female teachers were interviewed. This number of participants was based on previous research that found that 10-12 interviews within a similar group of people (PE teachers) would most likely be adequate and lead to data saturation (Guest et al., 2006; Small, 2009). In phase one, recruitment involved posting the advertisement on different approved social media platforms (Facebook, Twitter). In phase two, the PI and his faculty advisors shared the advertisement with different colleagues in the field of PE. In phase three, the PI emailed random PE teachers directly by searching random school district websites in different states. In all phases, the advertisement was provided, and teachers had to email the PI to be in the study. Each phase was added to increase recruitment and participation. The recruitment of new

participants ceased at fourteen interviews since new themes and findings were not being produced.

### 3.3 Principal Investigator Positionality

The PI has been a PE teacher for 13 years with teaching experience at the elementary, middle school, and college level in four different states. The PI believes in a standards-based curriculum with a public health approach to teaching PE to improve the health of the students (Sallis & McKenzie, 1991). This approach emphasizes putting into practice activities to increase motor competence and PA knowledge through movement.

### 3.4 Design

This qualitative case study examined through an interpretive worldview how current high school PE teachers support students' PA self-efficacy through in-person instruction. The study sought to better understand and thoroughly describe how and why some PE teachers are seeking to support PA self-efficacy (Tracy, 2019). The analysis of the data is not an exact measurement of current PE practices, but rather more of a holistic understanding of the practices of a few teachers through the eyes of the researcher (Tracy, 2019). Within this qualitative study, interviews were the primary sources of data. Field notes and analytic memos were used to guide and reflect on the research and analysis of the data. The PE teachers who agreed to be in the study participated in one Zoom interview that lasted approximately 50-60 minutes. Field notes were written by the PI during the rereading of the transcribed interviews. Analytic memos were written during data analysis to explain the coding of the data and to reflect on the coding (Tracy, 2019).

### 3.5 Data Collection Methods

#### 3.5.1 Interviews

The PE teachers participated in individual semi-structured interviews. This strategy allowed for more flexibility to probe into the different sources of PA self-efficacy right after participants mentioned them (Patton, 1980). The interview guide is found in the Appendix. The first eleven questions were always asked while the other questions were only needed if participants did not bring up the different sources of self-efficacy on their own. Questions were designed (Table 3) to ask participants about their daily class routines, students' PA self-efficacy beliefs, how they think students' beliefs are developed, how they support PA self-efficacy through in-person instruction based on the four sources of self-efficacy and their rationale for these decisions. Asking for their opinion and not normative constructs lessened social desirability bias (Fisher, 1993; Patton, 1980).

#### 3.5.2 Field Notes

The field notes were written as “loose interpretations” (Tracy, 2019, p. 146) of the transcribed interviews and the actual interviews themselves. The analytic reflections attempted to describe the researcher's own “reactions, doubts, potential prejudices, frustrations, and interpretations” (Tracy, 2019, p. 145). The field notes were meant to explain how the data were relating to the research questions and provide insight into resulting themes. The field notes served as a self-reflective instrument that allowed the researcher to “track the path and growth of claims” (Tracy, 2019, p. 146).

### 3.5.3 Analytic Memos

Analytic memos were written during the coding of the data and theme development. One analytic memo was written for first-level coding and each second-level category. The PI continuously added to the first-level coding memo to reflect and track coding decisions. This process was repeated for the analytic memos for the second-level categories as themes started to develop. The memos allowed the researcher to reflect, develop hypotheses, and explain the reasoning behind the coding and the connections among the codes (Tracy, 2019).

### 3.6 Analysis

The analysis was guided by the interview data with the field notes/analytic memos illuminating the process (Tracy, 2019). After each interview was transcribed, a field note was written for each interview. Once this was complete, first-level coding began. All the interview data were analyzed using a deductive thematic analysis to identify themes/patterns using social cognitive theory (Boyatzis, 1998). A codebook (Table 4) was designed based on the sources of self-efficacy. The first-level codes were mastery experience, vicarious experience, social persuasion, and physiological and emotional states. One other code was later added which was teachers' opinions/interpretations. These first-level codes were used to code all the data the first time around. For this, the PI used Microsoft Word to highlight first-level codes within each sentence of the document. One analytic memo was written for first-level coding to describe coding and provide a reflection on areas of confusion during coding. The second round of first-level coding attempted to identify and highlight any metaphors within the participants' answers on the

same Microsoft Word document. The PI's thoughts about the metaphors were added to the field notes for each interview. The third round of first-level coding checked for anything that was not captured in the first two rounds of coding.

After the third round of coding was complete, the first peer debriefing session occurred. This involved another researcher independently performing first-level coding with 25% of the interview data (Barber, & Walczak, 2009). The peer debriefer wrote an analytic memo based on their coding. The peer debriefer was then provided with the PI's coded version of the same data. Next, the peer debriefer and PI met to discuss the coding with a focus on examples where they disagreed and on potential themes in the data (Barber, & Walczak, 2009). The discussion resulted in no discernable disagreements between the peer reviewer and PI.

Next, the data were moved into categories based on the first-level codes. For this, the PI created separate documents for each first-level code (mastery experiences, vicarious experiences) and copied/pasted similar coded data from different interviews together on one Microsoft Word document. Once all the coded data were placed into first-level categories, the PI started to examine for themes and outliers in each category. One analytic memo was written for each category which started the second-level coding. Here the PI interpreted and identified patterns within each source of self-efficacy (Linneberg & Korsgaard, 2019; Tracy, 2012, 2019). The second-level coding involved the PI writing up the initial results for each category. Once the initial results were written, the PI examined the results to start to generalize and theorize to produce a better understanding of the data. This included how a few PE teachers are supporting students' PA self-efficacy, their rationale for their decisions, their interpretation of students' PA



self-efficacy, their opinions on the best ways to increase students' PA self-efficacy, and how the sources of PA self-efficacy interact with each other to support students' PA self-efficacy. This led to a working understanding of how teacher decisions are made and how it eventually affects students' PA self-efficacy. The PI combined the working understanding and initial results to fit into a storyline.

At this point, the second round of peer debriefing occurred (Barber & Walczak, 2009). The peer debriefer was given 25% of the coded data for each source of self-efficacy and was told to answer the research questions with the data. After the peer debriefer had time to reflect and write an analytic memo, the PI provided the debriefer with the working theory and initial results. After this, the PI and peer debriefer met again to discuss each other's findings. The peer debriefer believed the findings to be accurate and not biased. After the meeting, the PI used the information from the meeting to finish the final write-up of the results and discussion.

### 3.7 Credibility and Trustworthiness

To ensure the credibility and trustworthiness of the research findings, different strategies were used within the study. First, the interview questions were designed based on the sources of self-efficacy and found to be dependable based on a pilot interview. Member checks, peer debriefing, triangulation, and reflective field notes/analytic memos assisted in ensuring the credibility of the participants' data and researcher's interpretation (Patton, 2002). Member checks were done during the interviews to verify that the participants' information was being understood correctly by the researcher (Merriam, 1998). For example, the researcher paraphrased the participants' answers back to them and give them time to modify or clarify their answers. During the analysis of the data,

peer debriefing was used to assist with the trustworthiness of the analysis (Barber & Walczak, 2009). The peer debriefer helped to identify researcher bias, challenged the assumptions that the PI was making about the data, and provided a different point of view to assist in producing a more robust and critical investigation of the data (Barber, & Walczak, 2009).

The triangulation of interview data from multiple participants helped produce credible findings (Tracy, 2019). Triangulation of similar and opposing viewpoints from multiple participants was used to help enhance internal validity and provide a richer picture of how some PE teachers are supporting PA self-efficacy through in-person instruction (Shenton, 2004; Tracy, 2019). More than one hundred pages of field notes and analytic memos served as reflective commentary that gave evidence to effective techniques used to generate the results of the study (Shenton, 2004). While writing the results and discussion, the researcher tried to use thick description of the study, context, and results to help ensure credibility.

### 3.8 Summary

This qualitative case study used semi-structured interviews with current high school PE teachers to describe in-person and online PE practices to support students' PA self-efficacy and teachers' rationale for these decisions. The interviews also asked about participants' opinions of their students' PA self-efficacy and how teachers believed those self-efficacy beliefs were formed. This information was used to answer the first three research questions in the results (chapter 4). The discussion (chapter 5) then used the results to answer the last two research questions on how the described PE practices

aligned with recommended practices and how in-person and online instruction compared to each other.

Table 1 Participant Information

Name/Years of Teaching/State		
1. Melissa/4/CT	6. Patty/27/AZ	11. Mindy/13/WI
2. Cindy/15/IL	7. Jay/29/NC	12. Loraine/11/IL
3. Keith/12/IL	8. Kimberly/10/CA	13. Susan/28/IL
4. Jennifer/17/ID	9. Jeremy/5/IL	14. Mike/22/MN
5. Edward/9/OH	10. Austin 15/WI	

Table 2 Participant Background Information

General Information
1. Melissa was in her fourth year of teaching PE. She was a very caring teacher who was focused students' emotional health while in PE. She wanted students to have a better experience than she had and wanted to help students "realize fitness can be fun."
2. Cindy was in her fifteenth year of teaching PE. Students in her school were all provided with smartwatches to track their heart rate inside and outside of PE. Cindy referred to herself as the "crazy teacher" who tried to make PE enjoyable for students.
3. Keith was in his twelfth year of teaching PE. Keith got into PE because sports/exercise were some of his favorite things to do growing up. He enjoyed the variety of experiences that he could introduce to students through PE.
4. Jennifer was in her seventeenth year of teaching PE. She wanted students to feel successful and confident while in PE. Jennifer considered herself a "caregiver, mentor, and motivator."
5. Edward was in his ninth year of teaching PE. Edward was opinionated and enjoyed joking around during the interview. He encouraged competition during PE and wanted students to be more excited for PE. He called himself a "motivational speaker" since he had to "hype up" his students to participate in PE.
6. Patty was in her twenty-seventh year of teaching PE. She focused her teaching on increasing students' confidence and PA knowledge through fitness classes. She described the "need" to teach students to be "active throughout their lifetime."
7. Jay was in his twenty-ninth year of teaching PE. He described his teaching as being "big on success." He wanted to build students' confidence to be physically active. Jay taught students about growth mindset and self-efficacy.
8. Kimberly was in her tenth year of teaching PE. She said she enjoyed working with kids and described herself as being "kind of stuck in that play mode." Kimberly liked seeing the students' "personal victories."

Table 2 (continued)

9. Jeremy was in his fifth year of teaching PE. Jeremy was big on communication with students and building positive relationships with his students. He said his favorite thing about PE was “getting to know the students.” He wanted his students to feel comfortable in PE.
10. Austin was in his fifteenth year of teaching PE. He went into PE because he played sports and wanted to coach while he taught PE. Austin enjoyed “building rapport” with students and helping students to understand that PE was important.
11. Mindy was in her thirteenth year of teaching PE. She enjoyed getting to know students on a “personal level.” Mindy enjoyed “helping students find enjoyable ways that they could move.” She wanted to help students to “live a better life.”
12. Loraine was in her eleventh year of teaching PE. She wanted to make “personal connections” with students in PE and believed classroom management was a strength of her teaching. Her focus was on keeping students active during PE lessons.
13. Susan was in her twenty-eighth year of teaching PE. She said she loved “athletics and being healthy” and that is why she went into PE. Susan said she gets to “spend her whole day having fun.” She designs PA experiences for students to track improvement to build confidence.
14. Mike was in his twenty-second year of teaching PE and always participates with his students. He said that it is hard for students to complain when he is doing exactly what they are doing each class period. He wanted his students to “look forward to coming to class.”

Table 3 Interview Question Design

Source of Self-Efficacy	Interview Question Topics
Mastery Experiences	Description of in-person PE lessons, experiences to increase PA self-efficacy and PA knowledge/enjoyment
Vicarious Experiences	Observations, social modeling, competition
Social Persuasion	Feedback, encouragement, teaching style, student choices
Interpreting States	Students’ feelings during PA

Table 4 First-level Coding Categories

First-level Code	Description of Code
Mastery Experience	Any PA experience that students had that could have influenced their interpretations of a mastery experience with PA. This can include sports, physical activities, types of PE classes, assignments, quizzes, or content knowledge.
Vicarious Experience	This includes all the possible observations and social comparisons that students might have/make in PE. Examples include student observations of other students or teachers, group discussions, students watching a video or PowerPoint, and experiences that could limit or enhance students' feelings of social comparison (competition/fitness testing).
Social Persuasion	These are the words or actions of others like teachers, family, or other students. This can include encouragement, feedback, conversations with students, rewards, grading, and nonverbal encouragement (high-fives).
Physical or Emotional State	These are teachers' explanations of students' attitudes and feelings toward PA or PE. Examples include teachers describing students' levels of enjoyment, anxiety, and motivation.

Table 4 (continued)

Teachers' Opinion or Interpretation	This is used to code the teacher's opinion on a subject outside of the above four sources of self-efficacy. Examples include teachers' opinions of students' PA self-efficacy and teachers' explanations for their decisions.
---	---

## CHAPTER 4. RESULTS

The results in this chapter were organized by the first three research questions. The first research question examined teachers' opinions of students' PA self-efficacy and teachers' opinions of how students' PA self-efficacy beliefs were formed. The second research question investigated current PE practices that support students' PA self-efficacy. This research question was broken down by in-person (2a) and online (2b) practices. The third research question examined teachers' rationale for their decisions that they are making in PE. The results in this chapter were used to answer the last two research questions in the discussion (chapter 5).

### 4.1 Research Question 1: Students' Physical Activity Self-Efficacy

To teachers, having high PA self-efficacy meant that students have had successful experiences that have resulted in an increase of PA knowledge which allowed students to design their PA while not being distracted by social comparison. According to most of the teachers, students have a wide range of PA self-efficacy beliefs that are developed from their previous experiences with PA. Teachers felt similar to Austin who stated, "I think their confidence levels are all over the board in high school. You're gonna have some kids that come in that are super confident and other kids that are insecure and don't want anybody to see them sweat." Kimberly referred to this insecurity as students being "afraid to look bad" in front of other students. According to Cindy, students who had low PA self-efficacy had "no clue about much of anything." These students had limited PA knowledge. Cindy said the reason for this was that students mostly "played" games in elementary/middle school PE and were not provided the "tools" with "how to be

physically active and why it's important.” Due to their lack of knowledge of PA, Jeremy believed that students who lacked confidence often had trouble creating their own PA goals. Edward believed that these students might not even understand what it means to be physically active. He said their perception of being physically active was “lifting weights and running on the treadmill” and did not include activities like walking and dancing. Most teachers described students with low PA self-efficacy as having limited knowledge associated with PA and being self-conscious of how they looked in front of others.

Conversely, most teachers described students with high PA self-efficacy as knowledgeable, confident, and less concerned about other students while participating in PA. For example, Cindy said that students who had high PA self-efficacy “understood what activities they liked, what they didn’t like, and how they could incorporate it into their life outside of high school.” Cindy’s PE program accomplished this through “scope and sequence” style instruction with PA that started with the “basics” and “continues adding on from there.” Jay said he sees an increase in students’ PA self-efficacy when students “start to branch out on their exercises. They’re not so concerned about the people around them anymore.” In this example, students are less worried about social comparison and start to attempt new physical activities with confidence. Mike said students can “be themselves” when they are less worried about social comparison. Overall, teachers described students with high PA self-efficacy as having the PA knowledge to start to design PA based on their individual goals while not being distracted by how other students felt about them.



## 4.2 Research Question 2a: Teachers' In-Person Examples to Support Students' PA Self-Efficacy

Teachers had varying levels of control over students' PA experiences, students' observations, and the social persuasion that students were provided in PE. Overall, teachers in the study designed and implemented the PA experiences (behaviors) that students participated in which some teachers believed could influence students' interpretation of their mastery experiences with PA (theme 1). Teachers decided which PA students would participate in, what a successful PA experience entailed, how PA experiences were designed, and what PA content knowledge instruction/assessment and PA management skills were put into practice. Teachers also had some control over the observations that students had in PE (theme 2). The teachers chose who modeled PA to the whole class, when whole group modeling occurred, what different types of modeling experiences students participated in, and how activities like competition and fitness testing were designed. The teachers also provided social persuasion in different ways which they said can influence students' perceptions of PA and students' PA self-efficacy (theme 3).

### 4.2.1 Theme 1: Implemented PA Experiences

The teachers in the study designed and implemented various PA experiences for students. Teachers decided what PA students participated in daily (subtheme 1). The teachers chose which manipulative movements, exercise movements, low-intensity PA (walking), and games would be used in their PE classes. Teachers also decided the parameters of a successful PA experience through their grading/assessment of students' PA (subtheme 2). This included what movement intensity students had to move at to receive a daily participation grade and how results of fitness testing were managed. The

teachers also chose how PA experiences were designed (subtheme 3). This included how PA opportunities were taught (progression), which choices students were provided, and when modifications were provided to students for each PA experience. Teachers also decided what PA content knowledge instruction (subtheme 4) and PA management skills were put into practice in PE (subtheme 5).

#### 4.2.1.1 Implemented Physical Activities

Most teachers taught a variety of PA that mostly consisted of moderate to vigorous PA. Almost all the teachers felt like Mindy who attempted “to incorporate a big variety” of movement and fitness experiences. Jay referred to this base of knowledge as a “library.” He wanted to build students’ “physical literacy.” He said, “I look at exercise like a library and I want my kids to have many books in their library.” By introducing students to a wide variety of PA, teachers attempted to increase students’ understanding of the many different types of PA that students could participate in to be successful with PA. The majority of the PA that students participated in were activities that were performed at moderate to vigorous intensities like sports and exercises. Only some teachers (Jennifer, Edward, Patty, Kimberly, Jeremy) had students participate in low-intensity PA like walking. All the teachers had students participate in a variety of PA with most teachers putting into practice more moderate to vigorous PA than low-intensity PA.

#### 4.2.1.2 Parameter of a Successful PA Experience

Teachers decided the standards of student performance with PA through their grading. Students’ grades set the parameters of a successful PA experience for students. In some cases, students’ grades were determined by students’ intensity levels or

performance outcomes. At other times, students' grades were determined by student participation. Most teachers described to students that student effort would result in students receiving full points for their grade for the day. For example, Kimberly told students, "I don't care if you're a good athlete... Show me the effort." While most teachers told students a similar message, some teachers' grading did not align with this message. Some teachers (Cindy, Edward, Austin, Mike) decided the level of intensity that students had to exert to earn their grade for the day. For example, Cindy's students had to hit certain parameters on their heart rate monitors during class time and that was how they were graded. Mike and Edward expected students' best effort while in PE and decided themselves what was an acceptable level of intensity for each student. When students did not participate at these teachers' chosen level of intensity this affected students' grades for the day. At times, students' performance outcomes with PA determined a grade. For example, some teachers (Kimberly, Austin, Loraine, Keith) graded students' fitness test scores. Not all teachers graded students in these ways. For example, some teachers (Jennifer, Patty, Jay, Jeremy, Mindy, Loraine) allowed students to perform PA at any effort or intensity level. Jennifer told her students, whatever "level that works best for you" is considered a successful PA experience. These examples indicated that teachers had different standards of student performance with PA that might influence how students interpret their PA experiences as successful or unsuccessful.

#### 4.2.1.3 Design of PA Experiences

Teachers generally controlled the design of students' PA experiences that some teachers thought could influence students' PA self-efficacy. The teachers controlled how

PA would be taught through progression, what choices students would be provided, and when modifications would be provided to students. Almost all the teachers gave examples of students experiencing success by progressing from basic movements to advanced movements. Patty explained how she begins her fitness classes to help students to experience success with being physically active before introducing any exercise skills. She said, “we start out very gradual. I like success. If you try to kill them, they're not gonna like it and they won't want to continue.” Similar to the other teachers in the study, Patty wanted her students to experience initial success to make it an enjoyable and comfortable experience because she believed that students’ interpretation of the PA experience could influence their future actions. Most teachers also said that progressing through skills with practice would help to increase students’ competence for skills and increase enjoyment during gameplay.

When designing PA opportunities, the teachers also chose what choices students would have with each PA experience. As stated above, some teachers gave students full control over the intensity that they could move at to earn their PE grade for the day. Patty even gave her students the option to walk instead of participating in the designed activity each class, which no other teacher provided to their students. Some teachers (Keith, Jennifer, Jay, Jeremy, Austin) gave students choices in how they could participate in PA which included students designing different practice opportunities and PA experiences. For example, Jennifer allowed her students to create different dances to perform in class. Similar to the other teachers who were providing students with choices with PA, Jennifer wanted to put students in the “driver’s seat” to help her students feel more comfortable performing the PA and increase student enjoyment.

Another student choice that is not fully controlled by teachers is student PE class selection. Almost all the teachers agreed that when students can choose their PE class, this resulted in more student enjoyment. As Cindy said, “giving students choice (of classes to take) is highly important to the success of enjoying any kind of physical activity.” Most of the time students had to take a general education freshmen PE class and then they could choose from different electives after that (Austin, Jeremy, Mindy, Cindy, Susan, Mike). Only a few programs allowed students to always choose their PE classes (Jennifer, Patty, Jay) or only offered choices to students after two to three years of general PE (Kimberly, Loraine, Keith, Edward). Melissa’s PE program was unique in that students got to choose which unit they participated in every two weeks. Almost all the teachers in the study believed that students would enjoy PE/PA more if they had the choice of the type of activity class to take.

Teachers decided when modifications were provided to students which could have possibly influenced how students interpreted PA. For example, some teachers (Jennifer, Patty, Jay, Jeremy, Mindy) gave students all the modifications at the beginning of instruction and allowed the students to choose which modification they wanted to participate in. Jennifer said providing students with modifications at the beginning of instruction allowed students “to try all the different levels but go back to where they felt comfortable and successful.” Mindy had somewhat the same approach to modifications. She said, “I always show modifications. It's not just, ‘hey, here's how you do a push-up, and if you can't do that, let me know.’ But ‘hey, here's three different ways. Choose one that works for you today.’” Jay wanted students to choose how they were going to participate with PA so “they could have the ability and hopefully that confidence” to be

physically active “if they wanted to.” Alternatively, for Kimberly, Keith, and Austin, modifications came after students were unsuccessful with PA. As Keith said, “if a kid can't do a certain exercise at all. I try to go slow (and) build them up.” Austin offered students modifications when running on the track if they could not do the initial activity. In these examples, an unsuccessful experience with PA resulted in a teacher providing modifications for student success. This shows the differing styles of how/when modifications were used in PE, which might have influenced how students interpreted their mastery experiences with PA.

#### 4.2.1.4 Implemented PA Content Knowledge Instruction

The PE teachers controlled the development and implementation of PA content knowledge which some teachers thought could influence students' participation with PA. Teachers differed on how much they thought PA content knowledge should be implemented in PE. Some teachers (Cindy, Jennifer, Patty, Mindy, Susan, Mike) were like Jay who said, “I am really big on the education part of physical education.” He wanted students to learn both “physical” and “cognitive” skills. Patty believed that students should be told why the PA they are performing is important every day. She referred to this as giving students “the big picture.” Patty did this to increase students' PA content knowledge and possibly increase students' motivation to be physically active. Only Cindy and Jay had students completing modules online for homework. As Cindy explained, “their work is sent to them on Monday and it's due on that Sunday (which) shows me that they understand all the concepts.” Other teachers (Loraine, Keith, Edward, Austin, Melissa, Jeremy, Kimberly) spent less instructional time in PE on the knowledge associated with PA. These teachers felt similarly to Austin who described how much he

taught about PA knowledge when in-person. He said, “I think it was just more conversations (about PA knowledge). We would have various things on our web page. Different links and outlets or workout plans. Things like that, but not so much (instruction).” These teachers did not plan out instruction to teach knowledge associated with PA but instead relied on more unplanned conversations about it with students. Potential reasons for less instructional time were that some teachers (Lorraine, Edward, Keith, Austin) believed PE should focus on maximizing PA time for the students or that these concepts were covered in health class (Keith, Edward).

Most teachers reported that they had complete control over the content they taught, and their assessments were based on what they believed students should know to be physically active. All teachers mentioned teaching students about the benefits of PA. Other PA content commonly taught were the physiological changes of the heart during PA (Cindy, Jennifer, Edward, Patty, Jay, Mindy, Lorraine, Susan, Mike) and the different components of fitness (Cindy, Jennifer, Edward, Patty, Jay, Mindy, Susan, Mike, Jeremy). Few teachers (Cindy, Jennifer) mentioned teaching skill-related fitness components such as speed and power. Mike believed that instruction on PA knowledge “kind of lights a fire” for some students who go on to major in different health/kinesiology degrees in college because they were “passionate about the concepts we were teaching.” Approximately half of the teachers were using some form of assessment to have students demonstrate knowledge associated with PA. The most common form of assessments used by teachers were quizzes/tests (Cindy, Edward, Patty, Jennifer, Mike) and assignments (Cindy, Jennifer, Jay, Jeremy, Mindy, Susan, Mike). The assignment that was most commonly put into practice involved students designing

workouts. Mindy said that having students create their workouts assessed “what students know about muscles and movements.” Teachers generally decided what content and assessments they would implement in classes. The teachers that put into practice more PA content knowledge instruction and assessment wanted to increase students’ PA content knowledge, which most teachers used to describe students with higher levels of PA self-efficacy.

Teachers used various activities to increase students’ understanding of their physiological and emotional states during PA. Almost half of the teachers (Cindy, Keith, Jennifer, Patty, Jay, Kimberly, Jeremy) mentioned having students track their heart rate during PA with only a few teachers (Cindy, Jennifer, Jay) implementing this daily. When Jay teaches about heart rate, he used the Rating of Perceived Exertion Scale (Borg, 1998). He wanted students to better understand the connection between what their “heart is telling them” to what their “mind is telling them.” Only a few teachers (Patty, Jay, Mindy, Mike) mentioned teaching other physiological responses to exercise. For example, Patty regularly talked to her students immediately following PA. She told her students that “when you're breathing hard, when your body temperature is up, (and) you feel like you want to give up... Those are all very positive things.” Patty wanted her students to understand what happens to the body during exercise and that the physiological changes were normal, positive, and that students would experience the benefits of PA because of these physiological reactions. A few teachers (Jennifer, Patty) guided students through the process of identifying how they felt emotionally about PA while in PE. Patty asked students after PA “how do you feel? You feel better than when you walked in?” Patty wanted students to feel the emotional benefits of PA and directed



them to reflect on it right after PA. She stressed the importance of “making students feel good when they’re in PE” because she thought PE was the last chance to “hook” students and get them to “buy-in” on PA. Patty believed that students’ interpretation of their PA experiences would influence future PA. To assist students in their interpretation of their physical and emotional states during PA, there were more experiences in PE for students to better understand/interpret their physiological states during PA than emotional states.

#### 4.2.1.5 Implemented PA Management Experiences

At times, some teachers implemented different PA management activities to assist students in experiencing and understanding how to have a successful experience with PA. Some of the teachers (Cindy, Keith, Jennifer, Jay, Patty) had students’ monitor their heart rate during PA to assist students in managing their PA intensity levels which also increased students’ understanding of their physiological changes during PA. These teachers felt similar to Jennifer whose students used heart rate monitors to better understand how to get into the target heart rate zone and “take control of their intensity.” She believed this resulted in students feeling “comfortable” and less “afraid” of having to move at a vigorous intensity “the whole time.” Three teachers discussed using other forms of progress monitoring of PA in PE. Cindy, Jennifer, and Patty tracked student steps while in the gym and they were doing this daily to help students better understand how much PA is needed daily, how to start to track their own PA, and how to manage their PA levels. These teachers thought this information could increase students’ awareness of their daily PA levels and Patty believed was the “first step of self-analysis.” Only Cindy and Jennifer said that they had students track PA outside of in-person PE. Cindy said it teaches students “how to incorporate movement within their day” and

Jennifer said it reminds students to be physically active. They both believed it could help students to better understand their PA levels outside of school. Other teachers (Susan, Mike) were tracking daily progress in the weight room because they thought improvement can increase confidence. Susan even had students do “body measurements” so students could track “increases in muscle size.” She had students measure their muscles in centimeters because she said students experience “more success that way.” These progress monitoring experiences might have helped students to manage their level of intensity, daily PA, and track improvement, which these teachers thought could have influenced students’ interpretation of their PA experiences and their PA self-efficacy.

Goal setting is another PA management skill being used. Most (Cindy, Keith, Jennifer, Edward, Jay, Kimberly, Austin, Loraine, Susan, Mike) teachers gave the students the goal of improving their fitness testing scores. Some teachers were forced to do this by their school district and others used it to assist student observation of improvement. Only Jay and Kimberly had students set PA goals and reflect upon those goals regularly. Some teachers felt similar to Jeremy who had more informal conversations about goal setting in his weight training class than having students write out goals. He said, “I didn't see a lot of benefit from it. Maybe that's because I didn't go over it more frequently or I didn't have them record their progress towards goals.” Jeremy believed the students were creating their own goals and were very motivated to participate which is why he did not have them set “formal” goals in class. In Jennifer’s class, students tracked their PA outside of PE and then reflected on their PA. She asked them, “what are some of the biggest barriers to your physical activity and what can you do about it?” She wanted her students to start “to think about those things.” Outside of

the goal to improve fitness scores, very few teachers in the study had students set goals, reflect on their results, and action plan for future PA.

#### 4.2.2 Theme 2: Implemented Observations for Students

The PE teachers in the study had some control over the observations that students had while in PE. The teachers controlled which people (teachers/students/community members) would model PA to the whole class and what different types of modeling experiences (group discussion) students participated in (subtheme 1). Teachers also decided when (always/rarely) social modeling occurred (subtheme 2). How activities like competition and fitness testing were designed by teachers also influenced the observations that students might have had during PE (subtheme 3).

##### 4.2.2.1 Implemented Modeling Experiences

All teachers participated in social modeling of PA and most teachers (Melissa, Keith, Jennifer, Jeremy, Austin, Mindy, Loraine, Susan) set up situations for students to demonstrate PA also. Mindy was unique and had students observe community members leading PA during class. She wanted to “connect students with outside resources” and show them “how to continue lifelong movement” in their community. Another reason she wanted community members to teach classes was that students would possibly observe someone and say that person “kind of looks like me.” Mindy thought that students observing community members that were similar to them might increase students’ confidence to be physically active. Other teachers (Melissa, Patty, Jay, Jeremy) used online videos to model PA. For example, Melissa, Patty, and Jeremy occasionally had students follow along to online videos to provide variety. Jay’s class was different. He wanted students to learn “responsible use of technology” and encouraged students to do

online exercise videos for class. He described telling students that “you can get a lot of great information on your phone or your computer to help you be physically active.”

These examples illustrate the different people who could model PA for students in PE.

The most described observation by teachers in the study was social modeling. This most often involved teachers or students modeling how to be successful with PA. For example, Jeremy believed student modeling of PA helped less “competent” students say “hey, that person (who is also low competent) did it, they’ve never weight lifted before.” Jeremy thought these types of observations resulted in increases in students’ PA self-efficacy. Some teachers (Kimberly, Susan) also believed that observing unsuccessful performance outcomes with PA could assist students in feeling comfortable participating. When students felt uncomfortable performing around their peers, Kimberly would “put herself on blast” and demonstrate an unsuccessful attempt. Kimberly believed that by modeling failure she could lower some students’ anxiety associated with participating in PA in PE. Kimberly also believed some of her low-skill students became more comfortable with PA when they observed their peers “being bad at stuff” or unsuccessful. These observations of unsuccessful performance outcomes resulted in students wanting to participate with “their people” who were at “their skill level.” These examples illustrated how modeling and social comparison are closely associated. According to most of the teachers in the study, as students observed other students’ performances with PA, they were also most likely making social comparisons which could influence students’ PA self-efficacy.

Teachers also implemented other modeling experiences within PE, but not as often. For example, some teachers (Melissa, Jennifer, Jeremy, Austin, Loraine) explained

sharing personal success stories with PA. Jennifer told her students that it took her “a whole year of strength training” to be able to do push-ups. She had to tell herself that she “could do it” and “laughed a bit” during the process. Here, Jennifer shared how practice, working towards a goal, and normalizing failure during the learning process led to success over time. The teachers who shared personal success stories did so to increase students’ PA self-efficacy. Some teachers also set up modeling experiences with group discussions (Melissa, Jennifer, Patty, Jay, Loraine Patty). For example, Patty had students describe their physiological responses after PA in group discussions. She asked students, “what are you feeling right now and why do you think that is?” Jennifer had students share out information with a partner in a walk and talk activity. She wanted to give students that “opportunity and space for sharing” how they would be active on the weekend and what they enjoyed doing for PA. Other examples of implemented modeling experiences involved grouping students together for activities. For example, Melissa and Susan assign students to videotape each other performing skills and then have the students analyze their performance. Other teachers (Keith, Edward, Austin) had students observe their peers by purposely matching students with differing abilities together. These teachers put into practice these different modeling experiences in hopes of increasing student understanding and PA self-efficacy.

#### 4.2.2.2 The Occurrence of Teacher Modeling

Teachers decided when and how often they modeled PA to their students. When teachers choose not to model or participate in certain PA, this could have possibly had a negative influence on students’ perceptions of PA. For example, Loraine would “sometimes participate” with students but not when it came to fitness testing and she said

her students called her out on it. In this way, Loraine's failure to model an activity might have influenced a student to perceive that activity as unenjoyable. Mike and Keith felt when teachers refused to model or participate in PA, this could have affected students' perception of the PA and their teacher. Mike said, "if you're going to have any credibility (as a PE teacher), you gotta show the kids that you can do this (PA), that you believe it." He explained that "we've probably all had instructors who did the opposite, and it was very easy to be resentful." He believed "kids are smart and can spot hypocrisy really fast." Mike suggested that students may begin to think it is unfair that they must participate in certain physical activities that the teacher would not even participate in. According to Mike, this misalignment between a teacher's words (fitness testing is important) and actions (teacher will not model fitness testing) can influence students' interpretation of PA. The teachers in this study decided when they were going to model PA, which some teachers believed could influence students' perceptions of PA and their teachers.

#### 4.2.2.3 Competition and Fitness Testing Design

According to the teachers in the study, activities like competition and fitness testing could have influenced the social comparisons that students made and perceived, which teachers believed could affect students' PA self-efficacy. Competition among students could sometimes enhance social comparison since there is usually a winner and a loser, which shapes the parameters of a successful experience with PA. As Mindy stated, the outcome of competition "can really drive people sometimes to do well. It can also be a huge turnoff to people and just make things horrible." In this example, competition enhanced social comparison, and an unsuccessful PA experience in this

situation could lead to a “horrible” experience. As Melissa said, some students “love” competition, and other students “dread it like it’s the plague.” According to Melissa, competition could have resulted in students not wanting to participate in certain PA experiences and avoiding the activity altogether. An increase in social comparison through competition can also result in enhanced emotional interpretations of PA. As Keith said, “you see the best and worst come out of people when competition arises.” Similarly, when fitness testing was measured against predetermined norms, this could have resulted in students perceiving that they were successful or unsuccessful in their PA experience. Teachers implemented a mix of experiences that might limit (Melissa, Cindy, Keith, Jennifer, Patty, Jay, Kimberly, Jeremy, Austin, Mindy, Loraine, Susan, Mike) or enhance (Melissa, Edward, Kimberly, Keith, Austin, Loraine) social comparison in competition/fitness testing.

To limit social comparison in competition and fitness testing, some teachers (Jennifer, Kimberly, Jeremy, Austin, Mindy, Loraine) had all students participating in competitions/fitness testing at the same time so that students were not afforded the chance to observe their peers. Mindy did not want students to “feel self-conscious” and feel “like everyone’s looking at them.” As Keith said, this could be “embarrassing” for some students. To lower the anxiety of participating in front of peers in competition, some teachers (Melissa, Cindy, Kimberly, Jeremy, Mindy) allowed students to select their level of competitiveness, grouped students by skill level (Austin, Loraine), or eliminated scoring (Melissa). Keith and Patty wanted to accomplish the same thing in fitness testing by allowing students to take tests at home or in private at the school. Another way that teachers attempted to limit social comparison was by emphasizing

sportsmanship/fun in competition (Cindy, Kimberly, Loraine, Mike) and participation/personal improvement in fitness testing (Patty, Jay, Susan, Mike). Mike and Kimberly told students before competition that the focus of the game was on sportsmanship, being a good teammate, and having fun. Similarly, the teachers above had students perform fitness tests to track personal improvement and stressed to students that their test scores should not be measured against other students' scores. In these examples, a successful experience with competition and fitness testing included participation, enjoyment, and tracking individual progress, which teachers hoped would lower social comparison and student anxiety.

Some teachers described actions that would enhance social comparison within competition/fitness testing. For example, some teachers (Melissa, Keith, Edward, Loraine) had students participate in competitions where all students were playing in one game and everyone in the class was paying attention to what was going on in that game. Melissa suggested one issue with this approach was that students might "fear" having to participate. Keith and Edward both mentioned not having enough space and believed students were motivated by these activities as reasons why they set up games that way. Edward said students "are super engaged" when the games are "Super Bowl stakes" and students are "ready to cry over" the game. Here, Edward was willing to accept the negative consequences of this activity because he believed it motivated students to participate. Another example of how implemented experiences can enhance social comparison was when fitness tests were performed in front of peers and graded (Kimberly, Austin, Loraine, Keith). Kimberly's school district mandated that she grade students' fitness test scores to determine if students were "physically competent." She



said the emphasis was on improvement and success, but the process could be “degrading and humiliating” for some students. In these examples, some teachers believed that putting students’ skill/fitness levels on display for many other students to observe and emphasizing the outcome of the experiences could have increased students’ feelings of social comparison and negatively influenced students’ perceptions of their PA abilities and their PA self-efficacy.

#### 4.2.3 Theme 3: Social Persuasion from Teachers and Students

Teachers provided students with different types of social persuasion that teachers believed influenced students’ participation with PA and PA self-efficacy. Almost all the teachers mentioned providing students with encouragement and positive/private feedback to build positive relationships with students. For example, Edward tried to encourage his students by “hyping them up” and said he sometimes had to provide students with “fake praise” just so the students would “buy-in” and participate in PA. Susan said that motivating students to be physically active in PE is the “hardest thing to do.” She also believed students needed different levels of encouragement for PA in PE. Loraine believed this could be because some students “may not have that support at home or that push outside of class.” This is why teachers also reported working to build individual relationships with the students. As Jennifer explained, “without a relationship, it’s really hard to make anything else happen.” Many teachers used the beginning of class to check in with students and have quick conversations with students. Teachers wanted students to know that they cared about them. All the teachers felt encouragement was needed for some students to participate in the physical activities in PE which is why they continuously provided it for students.

Feedback was also used by all the teachers to support students with learning skills and feeling more successful. For example, when Cindy gave “constructive” feedback she “always started out with something positive first and then about the change that they (students) needed to make.” The teachers in the study emphasized the importance of positive feedback for students. In another example, Jennifer used feedback to “help students feel successful” because she believed students needed assistance “processing” what a successful experience with PA entailed. Most teachers believed their feedback could assist students in feeling comfortable, successful, and influenced if students participated in PA experiences. Some teachers (Melissa, Jennifer, Patty, Austin, Mindy, Loraine) also designed/implemented experiences for students to provide social persuasion to each other. These teachers wanted to “create a culture” of “student camaraderie” by having students high-five each other, provide positive feedback to each other during gameplay, and participate in “ice breaker” activities with each other.

Some teachers also believed that their encouragement and feedback could assist students in normalizing failure. Jeremy, Jennifer, and Jay helped students to understand that even when they had a failure or setback with PA, it was still a successful PA experience. Jeremy gave an example of what he “preaches” to his students. He said, “it’s really easy to do things that you’re already good at. It’s okay to struggle at something or not be good at something and be willing to improve and get better at it.” Jay told his students that “relapse is just a part of the process (of being physically active). It doesn’t have to derail you.” Jay described spending the first two weeks of class teaching about “growth mindset.” He gave students a challenge that they could complete with time and effort. As students failed to complete the challenge and began to say that they “can’t do

it.” He told them, “you can’t do it yet.” He said students “want that safe place” to make mistakes in. For these teachers, normalizing failure might have helped students to interpret setbacks/failures with PA as normal and therefore have no effect on students’ PA self-efficacy. Overall, teachers wanted to provide students with different forms of positive social persuasion because they believed it could influence students’ participation and their PA self-efficacy.

#### 4.3 Research Question 2b: Teachers’ Online Examples to Support Students’ PA Self-Efficacy

Online PE forced almost all the teachers to have to completely change the PA experiences that they implemented in PE and the social persuasion that they provided to students. As Austin stated, “it’s kind of revamped our teaching.” Despite the differences between in-person and online instruction, similar themes emerged from the data. First, teachers still designed and put into practice the PA experiences that students participated in that some teachers believed could influence students’ interpretation of their mastery experiences with PA (theme 1). Teachers decided what structured PA students would participate in, what a successful PA experience entailed, how PA experiences were designed, and what PA content instruction and PA management skills would be implemented. Second, teachers still had some control over the observations that students had in PE (theme 2). The teachers controlled who modeled PA to the whole class, when whole group modeling occurred, what different types of modeling experiences students participated in, and how physical activities were designed. Third, the teachers also still provided social persuasion in different ways that teachers believed was less effective than in-person social persuasion (theme 3).

### 4.3.1 Implemented PA Experiences

The teachers in the study designed and implemented various online PA experiences for students. Teachers decided what structured PA students participated in daily (subtheme 1). The structured PA choices were limited to PA that students could participate in with no equipment and limited space. Teachers also decided the parameters of a successful PA experience through their grading/assessment of students' PA (subtheme 2). In most cases, student participation became the measure of success with PA and not student performance. The teachers also chose how PA experiences were designed (subtheme 3). During this time there was an increase in student autonomy with PA. Teachers also decided what PA content knowledge instruction (subtheme 4) and PA management skills were put into practice in PE (subtheme 5).

#### 4.3.1.1 Implemented Physical Activities

Teachers had to rethink the PA experiences that students had with PA while online. Since students were at home, this limited the PA experiences that teachers could design/implement for students. Teachers reported putting into practice various types of structured PA experiences that were primarily bodyweight exercises (all teachers) and non-competitive PA. For example, some teachers (Keith, Edward, Kimberly, Austin) taught units on dance. Edward tried "to keep it fun" and meaningful for students by incorporating different "Tik Tok dance videos" and celebrity Zumba videos that he found online. Almost half of the teachers (Cindy, Keith, Jennifer, Kimberly, Jeremy, Susan) had students participate in yoga/Pilates workouts. Keith and Kimberly explained how some of their students enjoyed the different forms of PA being offered online that were not offered in-person. Since students did not all have access to equipment, students were not

required to perform manipulative skills for PA although teachers did give students the option to participate in them for activity logs. Only Melissa mentioned giving students different options for PA weekly that contained manipulative skills like juggling and cup stacking. Nearly all the teachers discussed greater acceptance and encouragement for low-intensity PA like walking during virtual instruction. This may be due to teachers having to implement PA that they thought students would complete. As Patty said, “I kept it (PA) really light... I found the most fun workouts I could find.” Patty inserted more low-intensity PA into her online classes to keep students motivated so that they would continuously log on to class each day. She felt that if they did not enjoy the PA in class, then they would not show up for class. Overall, when students participated in structured PA it primarily was PA that required no equipment like bodyweight exercises, dance, yoga, Pilates, and low-intensity PA.

#### 4.3.1.2 Parameter of a Successful PA Experience

With online PE, most teachers changed how they grade students’ PA experiences which shifted the parameters of a successful experience with PA. For most teachers, a successful experience with PA online was based on student participation. Teachers elected to have students demonstrate participation with PA in a variety of ways online. Most teachers (Cindy, Edward, Patty, Jay, Kimberly, Mindy, Susan, Mike) attempted to have students demonstrate participation live while everyone in the class was online following along to the teacher or an online video. This worked well for some but was not as effective for others (see vicarious experiences below). Almost half of the teachers (Melissa, Edward, Patty, Jay, Jeremy) tried to have students film themselves completing

workouts as assignments. Melissa’s online PE class had success with students turning in videos weekly. As she explained:

We have a task chart with over 50 (physical) activities that rotate for them to choose from. They have to video themselves and submit to the teacher. But they are time-lapse videos. So, if it's an hour-long workout. It's condensed into five minutes. Jeremy and Patty also had students create time-lapse videos. For all three teachers, the focus was on students being held accountable for participating in weekly PA and not on demonstrating movement competence. For Jay, it was the opposite. His students had to create a workout video where they “demonstrated specific exercises.” Jay only had his students create one or two videos a semester because he felt “most kids will do it once, and even twice. But if you start asking them to do it all the time, my kids will shut down.” Most teachers tried to have students participate live in class while some had students record themselves on video to show participation with PA.

Another way that students demonstrated participation with PA was by logging their PA in fitness apps or activity logs (Keith, Jennifer, Jay, Kimberly, Austin, Mindy, Loraine, Mike). The problem that most teachers explained with activity logs was that students could be turning them in and not performing the PA. There were a wide variety of assignments implemented to have students demonstrate participation with PA and in most cases the focus was on students being held accountable for participating in PA and not on movement competence or performance. For these reasons, some teachers believed similarly to Melissa who explained that student “participation increased” online because some students who she described as “more quiet/introverted” students were “enjoying it more” than in-person PE. Almost all the teachers agreed that student success with online PA was less dependent on skill level/competence than it was for in-person PA.

#### 4.3.1.3 Design of PA Experiences

During online instruction, many teachers gave more choices and control of the PA experiences to the students, which most teachers believed increased enjoyment for some students. The teachers that had students complete activity logs to demonstrate participation with PA all allowed their students to complete any PA that they wanted. According to Austin, there were “a lot of positives” with students choosing their PA to complete. He said the students “liked the ownership and the flexibility of their own workouts and being able to pick and choose (their PA)” instead of having to participate in a “sport for two weeks.” Kimberly said that giving students choices with their activities gave students who “were always kind of bad at PE” the “opportunity to be successful.” She believed that those students were “finding a little bit more enjoyment” during online instruction because of the choices they were being provided. Most teachers also (Melissa, Keith, Jennifer, Patty, Jay, Kimberly, Austin, Jeremy, Mindy, Susan) allowed students to choose their PA intensity when participating in PA live on camera. Overall, teachers offered more students choices with PA online.

#### 4.3.1.4 Implemented PA Content Knowledge Instruction

The teachers who implemented more PA content knowledge instruction wanted to provide students with the knowledge to be physically active on their own. Teachers in this study mainly decided the amount of PA content knowledge taught/assessed online. For many teachers (Melissa, Jennifer, Edward, Jay, Kimberly, Jeremy, Mindy, Loraine, Susan), online PE increased instruction time. These teachers thought similarly to Jeremy who believed it was more like a classroom class than a PE class. Mindy also agreed that she was teaching “definitely more content” with online instruction. For example, Mindy’s students completed a weekly activity log that had “progressed throughout the semester”

to add different PA concepts that she taught to the students which guided students towards “creating their own workouts.” For Jay, Cindy, and Mike, instruction stayed consistent with what they were doing in-person, but Jay said because of the extra time he “could go more in-depth with those cognitive assignments.” He said, “I could actually sit down and teach for five to ten minutes and really answer questions.” Some teachers also used different instructional strategies outside of direct instruction to help students to learn content associated with PA. For example, some teachers used breakout rooms online for students to work on assignments in small groups (Cindy, Loraine, Mike), discussions/discussion board posts (Jay, Mindy, Loraine), or online modules for students to complete on their own (Jennifer, Cindy, Jay). For Austin and Keith, PE time should still be primarily about students being physically active which was why they rarely taught PA content online during PE. Keith believed students needed to participate in PA during this time because when they were at home they were “sitting down and not moving their bodies.” Most teachers increased instructional time for PA content online with only a few teachers not doing this because they prioritized PA during this time.

Content being taught online included perceived exertion (Jay, Kimberly, Mindy), changes in heart rate (Jeremy, Mindy, Susan), muscle identification (Kimberly, Mindy), and the benefits of PA (Melissa, Cindy, Keith, Jennifer, Patty, Jay, Kimberly, Jeremy, Susan, Mike). Almost all the teachers mentioned emphasizing the benefits of PA during this pandemic because they wanted students to know that PA could benefit them emotionally which might influence student participation with PA. Half of the teachers (Cindy, Jennifer, Jay, Kimberly, Jeremy, Mindy, Susan) mentioned using different types of assignments for students to demonstrate understanding of PA content. For example,



some teachers (Jennifer, Kimberly, Mindy, Susan, Cindy) used activity logs where students had to identify the type of fitness they were performing and other teachers (Cindy, Edward, Mindy, Mike) used quizzes/exit slips for students to demonstrate understanding of PA content. A few teachers (Jay, Jeremy, Mindy) had students create workouts online. The teachers who had students demonstrate understanding of PA content wanted students to know how to design their own PA.

Teachers decided the experiences they implemented to assist students in better understanding their physiological and emotional states during PA. Some teachers (Cindy, Jay, Kimberly, Jeremy, Mindy) had students track their heart rate/perceived exertion to help students better understand what physiologically happens to the body during PA. A major difference of online PE was the number of teachers who started to put into practice experiences to assist students in understanding their emotions during/after PA. Almost half of the teachers (Keith, Jennifer, Jay, Austin, Mindy, Mike) had the students complete an emotional reflection after every PA assignment while some (Edward, Patty, Jeremy, Loraine, Susan) only had students do this sometimes. Most questions were framed to help students to interpret how they felt during the activity and how they felt after the activity. For example, Keith asked, “how did you feel before the workout? How did you feel during the workout? (How did you) feel after the workout?” The teachers that implemented emotional reflection questions wanted to increase students’ awareness of the benefits of PA on their mental/emotional health and their level of enjoyment for certain physical activities. Susan used the student “feedback” from the reflection questions to plan future online PA experiences for students. The teachers that taught PA content knowledge instruction wanted to increase students’ knowledge to be able to

design their own PA plans and increase students' understanding of how PA influences physiological and emotional states.

#### 4.3.1.5 Implemented PA Management Skills

Teachers were implementing various experiences for PA management skills while online. The most common PA management skill put into practice was PA progress monitoring (activity logs) which was used by most teachers to hold students accountable for being physically active and not to track progress towards a personal goal. For example, six of the teachers (Cindy, Keith, Jennifer, Kimberly, Austin, Mindy, Mike) had students track PA daily. These teachers had similar expectations to Keith who said, "we'll have the kids use fitness apps. They can screenshot their results or they could just write down what they did." Some of the teachers (Cindy, Kimberly, Austin, Mindy) had students try to meet a certain amount of PA or goal. For example, Kimberly asked students "for 30 extra minutes of PA, five days a week." The other teachers (Melissa, Edward, Jeremy, Susan, Loraine) who only sometimes had students track PA for assignments online did not see the need for it since their students were either performing their PA live online or turning in videos of themselves performing PA. Only Mike mentioned having students' progress monitor with fitness testing while online. The increase in PA tracking was done to mostly hold students accountable for PA and only some teachers were having students track progress over time with a goal in mind.

Only a few teachers (Melissa, Keith, Jay, Jeremy, Austin) had students reflect on overcoming challenges to PA and problem solving to increase or improve PA. For Austin's PE class, students were given a weekly PA challenge like having to accumulate 50,000 steps in a week. He required that students "reflect on the challenge" to identify

barriers or “things that went well.” Austin said that he then tried to help students to identify ways to get in more PA during the day when students were doing fully online instruction. Discussions like these with students were the only type of action planning that was used by teachers, but rarely. Mindy, Jay, and Kimberly incorporated goal setting into student reflections. For example, Mindy had students create individual PA goals and then reflect on their PA from the previous week and how that affected them reaching their goal or not. Only a few of the teachers were designing experiences to help students plan their PA and set goals for themselves.

#### 4.3.2 Theme 2: Implemented Observations for Students

Teachers had some control over the observations that students had in online PE. The teachers controlled who modeled PA to the whole class, when whole group modeling occurred, and what other types of modeling experiences students would participate in (subtheme 1). During online instruction, modeling of PA was primarily provided by online videos and teacher demonstration. Teachers decided between synchronous observations, asynchronous observations, or no observations of PA. Teachers also designed physical activities, which teachers believed could influence students’ participation in PA (subtheme 2).

##### 4.3.2.1 Implemented Modeling Experiences

Most teachers reported either using mostly online videos with some teacher lead PA (Melissa, Edward, Jay, Mindy, Loraine, Susan) or exclusively were using online videos to model PA for their students (Keith, Kimberly, Austin). Edward tried to select age “appropriate workout/dance videos” of celebrities to motivate students to be physically active. For Keith, it was easiest to just post the PA video online and let the

students do it on their own time since some of them started to work part-time jobs during the pandemic. These findings support the variety of reasons why some teachers used online videos to model PA during online instruction. Only a few teachers (Cindy, Patty, Mike) were doing mostly teacher-led PA while online or recording videos of themselves (Patty, Mindy, Mike) doing workouts to share with their students to perform on their own time. Patty believed that teacher-led PA during this time was important. She said, “I just wanted them to know that I'm still your teacher. I'm here, I'm doing this too.” To Patty, her demonstrations of PA were a way to model being physically active while online and hopefully persuade students that they could do it too. In a different example, some of Mindy’s students told her that they “loved the workout videos” that she created herself and that they “wanted more videos” like that “on what to do” for PA. Keith mentioned that at times, his students were not provided with any observations of PA because the students were choosing what PA to participate in for their activity logs. Overall, the majority of instruction/modeling of PA implemented was through online videos, with only some teachers modeling live/recorded PA daily.

Some other modeling experiences mentioned by teachers were group discussions and posted student responses. A few teachers (Melissa, Jay, Jeremy, Austin) were using group discussions for students to share ways that they have been successful with PA during the pandemic. For example, Melissa asked students, “now that we are remote, where/what are you doing that's physically active? Are you being physically active?” Melissa encouraged her students to problem solve and share ways that others have used to be physically active. A few teachers (Mindy, Loraine) had students post discussion answers about PA knowledge to the online chat box which students could observe. The

teachers who implemented discussions believed online instruction offered more time to engage in these experiences, which they thought could facilitate student understanding and problem-solving.

#### 4.3.2.2 PA Design

Online PE resulted in many teachers designing PA experiences that sometimes eliminated or lessened social comparison. Competition has all but disappeared with online instruction. As Austin stated, “there's zero competition right now.” Almost all the teachers believed this benefited some students but not all students. Most teachers (Melissa, Cindy, Keith, Jennifer, Jay, Kimberly, Jeremy, Austin, Mindy, Loraine) eliminated peer social comparison associated with PA by not having students participate in PA in front of peers. These teachers either had students turn in individual PA videos or some sort of activity logs of their PA. Melissa said that “students aren’t seeing each other participate in activities and that goes along with mental health” which she believed “had increased their physical activity.” Kimberly and Mindy thought the absence of peer social comparison during PA resulted in some students feeling more comfortable and less anxious or embarrassed during PA. For these reasons, Keith did not make his students participate in PA live on video because he “believed there would be no participation if we did stuff on camera.” He explained, “there could possibly be 40 people just watching your screen” while students were performing PA. He also mentioned that some students might “videotape” each other while online which would make students “very uncomfortable.” The lack of social comparison was not always thought of as a positive. For example, both Cindy and Edward mentioned that when in-person, students did not want to be the “odd person out” who was not participating. This element of social

comparison might have influenced a student to participate while in-person but was not present online. Despite this rationale, most of the teachers agreed that eliminating social comparison made PA more of an enjoyable and comfortable experience for students online.

Only two teachers (Patty, Mike) described having success doing PA live on camera. Both teachers gave students options with how they had to be on camera. Mike told students to, “put a background on your screen” or “turn the lights down and get way back” from the video. Patty reported similar instructions. Both teachers wanted to see that students were present and did not care if they could only see a part of them on camera. To help students feel more comfortable performing PA on camera and possibly limit social comparison, both teachers also had everyone participating at the same time. Patty told students, “we’re all going to be doing the same thing, including me.” Similarly, Mike told students that they will all “go through the workout the exact same way,” which might have helped limit social comparison because everyone was doing the same thing at the same time. Important to note that Patty spent time at the beginning of the online semester getting students comfortable with being online together. She had students participate in a “show and tell” and had students give “virtual high-fives” to help students feel comfortable being on camera with their peers. She wanted students to experience social comparison in comfortable ways before moving into PA while online. Both Patty and Mike worked to limit social comparison by allowing students to not be fully visible on camera and by having all students participate at the same time.

Two teachers (Edward, Susan) discussed trying to have students participate fully on camera and did not have much success with this. Both agreed that they wanted to see

their students performing the PA. Edward estimated that only 6 out of 100 of his students turned on their cameras and performed the PA live while online. He believed that students do not participate because they were concerned with “not being cool.” He said, “that’s their whole purpose in life.” Edward said students will do whatever it takes not to look “lame.” During both Edward’s and Susan’s online classes, some students were performing PA live on camera while other students had their cameras off. This situation was similar to having to perform PA in front of people in-person and might have enhanced the feeling of social comparison. The teachers that eliminated or limited social comparison had more student participation than the teachers that have not tried to do this.

#### 4.3.3 Theme 3: Social Persuasion from Teachers and Parents

Almost all the teachers mentioned that online PE made it difficult to give students individual social persuasion. Jennifer believed that there was not enough time to meet with students online and that PE was not the priority during the pandemic. She explained that students had “jobs” or had to “take care of siblings” which “became significantly more important” during the pandemic. Another barrier to making connections with students was explained by Mindy who said, “having 35 black screens with just a name every day, there’s only so much you can do.” Most teachers reported their districts did not require students to be on camera, making it a struggle to connect individually with students. Almost all the teachers thought providing students with encouragement for PA was also more difficult online. Jeremy points out that during online instruction, students were “on their own” and had to motivate themselves to be physically active. Cindy considered this a “real downfall” of online instruction because she was not able to give students “that interaction” that “they needed.” Despite the challenges of providing social

persuasion online, some teachers (Melissa, Jay, Jennifer, Jeremy, Austin, Mindy, Mike) tried implementing different strategies to help build connections with students. For Mindy, this involved “having one on one sessions with each student to check in and kind of see where they're at.” Jennifer attempted to connect with students and parents through optional “office hours,” which she said allowed them to “connect with somebody or clarify things with them.” In a different example, Patty wanted to teach live online so her students could get to know her “personality” and “sense of humor.” She thought teaching live online would help create a connection to the students. Most teachers felt that it was more difficult to build positive relationships with students and provide effective encouragement online, which might have influenced the PA experiences that students participated in.

The feedback that teachers provided to students has also changed with online instruction since there has been a change in the parameters of a successful PA experience. For almost all the teachers, success with PA involved participation and was not based on the performance of the PA. This resulted in less feedback about student performance with PA and more praise for being physically active. Mike said that his feedback was mostly “fluff” when he was giving feedback on assignments like activity logs because he could not see their PA. He was unable to provide students with specific feedback based on their performance which resulted in mostly praising students for participation. The majority of feedback provided online was more praise for participation than feedback based on performance.

Mostly absent during online instruction was peer social persuasion. A few teachers (Melissa, Cindy, Edward) discussed the lack of social persuasion to participate



in PA that comes from peers. When teaching in person, Edward said he could have grouped students “with somebody that they liked or their friend that was participating and they would (participate) because their friends were doing it.” Cindy referred to this as “peer persuasion.” The lack of influential teacher/peer persuasion had some teachers (Melissa, Jeremy, Loraine, Susan) believing that students’ family members had more influence during online instruction than teachers/peers do. As Melissa explained, “I think it's their home life (providing the social persuasion). Right now, if their siblings or guardians are not active, they're probably more likely to not be active.” When students were at school the teachers were the primary providers of social persuasion for PA. With online instruction, most teachers felt that family members became more important in terms of providing students with social persuasion to be physically active. For this reason, Loraine and Susan tried to get family members involved. Loraine contacted students’ parents to let them know that students would be “moving around” for PE class and if they had not seen this, then that was a “red flag.” Loraine was “making sure that the parents get involved” in the social persuasion provided to students online in hopes of increasing participation with PA. According to teachers, online instruction removed peer social persuasion which made parent social persuasion more important to student participation with PA.

#### 4.4 Research Question 3: Teachers’ Rationale for Decisions

Teachers in the study were basing most of their in-person/online PE decisions on their interpretations and opinions of the PA experiences that they were implementing and their interpretations of different student factors (feelings, motivation, skill level). To

illustrate this point, Keith explained how he made in-person decisions on student practice and gameplay. He said:

We do a little bit of skill (practice)... I'm more about the game (play) because I think kids (students) develop more skills (competence) in gameplay rather than lining them up and just working on skills (practice). I think the kids get way more out of that (gameplay)... They don't want to stand in lines and work on waiting their turns on certain skills... They just want to play.

Keith's perception of practice minimizing PA time influenced his decision to incorporate more gameplay than practice. Teachers in this study were making similar decisions based on their interpretations of the PA experiences that students were participating in, the modeling experiences that teachers were implementing, the social persuasion that the teachers were providing, and students' decisions in PE. Keith's decisions were also influenced by his interpretation of his students' feelings towards practice and their motivation to practice. The teachers in the study shared this rationale for decision-making. Teachers were interpreting the PA experiences that they were implementing and also interpreting students' feelings about PA, motivation for PA, skill levels, and PA self-efficacy. For example, many teachers felt the same way as Edward who decided the amount of in-person practice time needed for students which was based on his interpretation of his students' skill levels for a particular skill. He said, "practice is less important for skills that students are already familiar with." Teachers' opinions and their interpretation of the many factors within PE influenced most of the decisions that they made within PE.

Different factors outside of PE also influenced the teachers' decisions on what PA experiences to implement and what social persuasion to provide to students. These factors include, but were not limited to, mandated school district experiences (fitness testing), type of PE class (elective/general education), outside information (research),

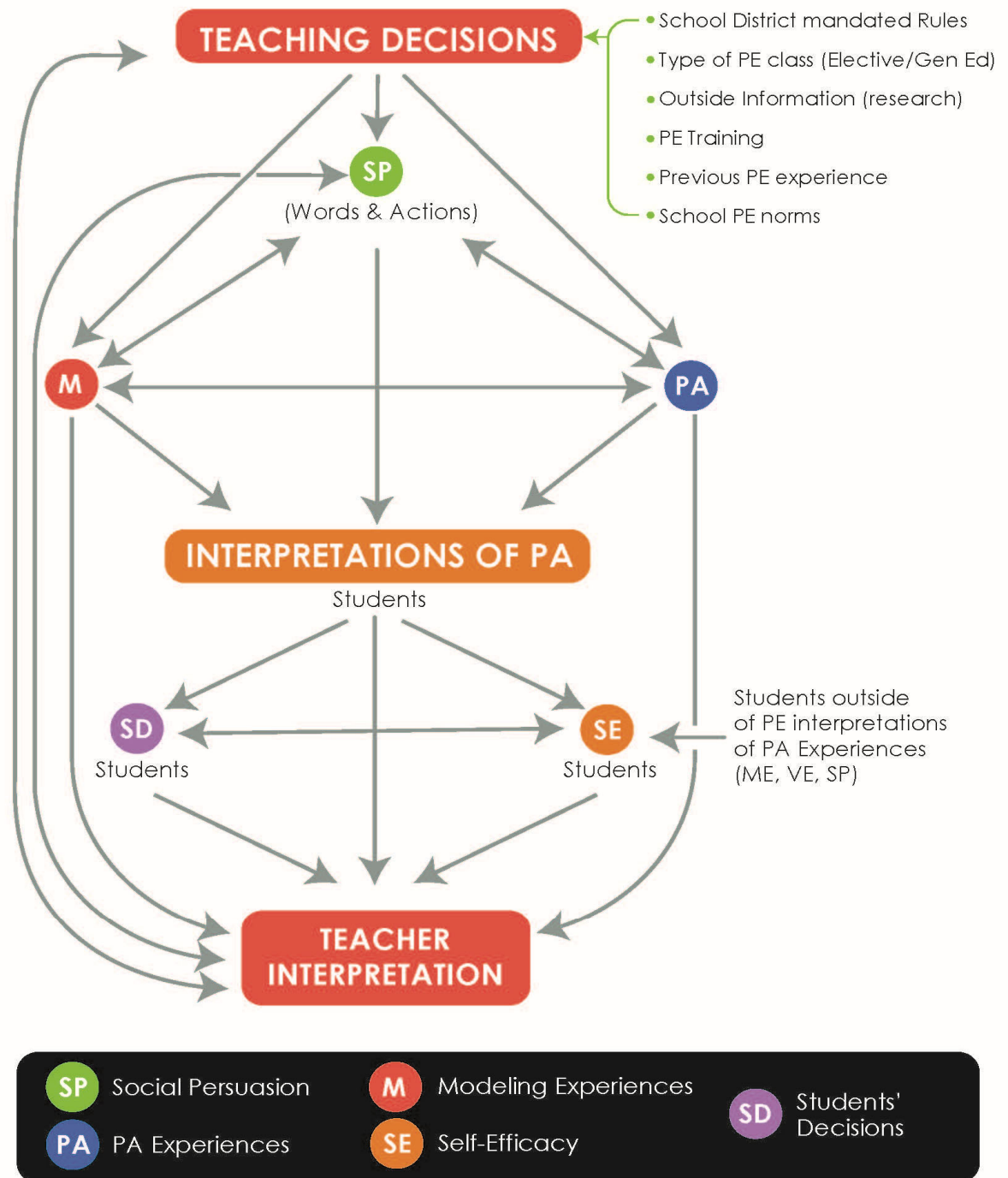
previous PE experiences/training, and school PE norms. For the example of in-person student practice, there was variation in the amount of practice that teachers believed students should participate in based on the class being an elective or a general education class. For example, Austin designed more practice for students that were in general education PE classes than the students who elected to take a team or individual sports class. He explained that the general education PE classes were more about “skill building and relationship building with peers” than competition. The elective sports classes consisted of students “that wanted to compete... and they liked the competition aspect of it.” Other teachers who taught these types of classes felt the same way as Austin. Overall, teachers’ in-person/online decisions were influenced by these different factors but generally, teachers had a great deal of autonomy in their decision-making process on what PA experiences to implement and social persuasion to provide to students. The teachers’ decision-making process is illustrated in Figure 1.

#### 4.5 Summary of Results

According to the teachers in the study, students who teachers perceived had high PA self-efficacy were knowledgeable, confident, and less concerned about social comparison than students who teachers perceived had low PA self-efficacy. The teachers in the study had varying levels of control over students’ PA experiences, students’ observations, and the social persuasion that students were provided in PE. The results were similar for in-person and online instruction. For both in-person and online instruction, teachers controlled different aspects of the PA experiences that students participated in while in PE. The teachers decided which PA experiences students were going to participate in, how the PA experiences were designed, and how students would

be assessed for their participation during PA. Teachers also decided what PA content knowledge instruction and PA management skills would be implemented. For in-person and online instruction, teachers reported they had some control over the modeling experiences that students might observe in PE. The teachers controlled who would model PA, how often modeling would happen, what different types of modeling experiences students participated in, and how activities were designed that could have either enhanced or limited social comparison. Teachers also provided students with social persuasion using various strategies. The teachers generally made all these decisions based on their interpretations of the whole PE experience and their opinions of what was best for students. These results were used in the discussion (chapter 5) to compare described PE practices to recommended practices to support PA self-efficacy and in-person to online practices. These comparisons and the results from chapter 4 were used to develop the recommended practices and future research sections at the end of the discussion.

Figure 1 Teachers' Decision-Making Process



## CHAPTER 5. DISCUSSION

The purpose of this qualitative case study was to describe PE practices being used by current high school PE teachers to support students' PA self-efficacy. Interviews allowed participants to explain their PE practices and their rationale for those decisions. Teachers were also asked about their interpretation of their students' PA self-efficacy and how the teachers believed students' PA self-efficacy beliefs were formed. This information was collected to answer the research questions listed here:

1. According to the PE teachers, what were students' PA self-efficacy beliefs and how were they developed?
2. How were high school PE teachers trying to support students' PA self-efficacy through in-person and online instruction based on the sources of self-efficacy?
3. What were teachers' rationales for the decisions they made when trying to support students' PA self-efficacy?
4. Do the described PE practices and teachers' rationales align with literature on how to increase student PA self-efficacy?
5. What were the similarities and differences of the in-person/online PE experiences that the teachers were using to increase students' PA self-efficacy?

The first three research questions were answered in the results (chapter 4). The last two research questions were answered in this discussion (below). The discussion concluded with recommended practices, recommended future research, and conclusion.

## 5.1 Study Overview

This qualitative case study used semi-structured interview questions that were formed based on the sources of self-efficacy. The objective was to describe examples of how current high school PE teachers were supporting students' PA self-efficacy through in-person and online PE practices. Interviews were performed on 14 current high school PE teachers in the United States. The participants represented nine different states and ranged in experience from 4-29 years of teaching PE. Teachers participated in one-hour interviews that asked about their daily teaching routines, strategies to increase PA self-efficacy, and their students' PA self-efficacy. Interview data were transcribed and coded based on the sources of self-efficacy. The analysis focused on answering the research questions and identifying themes and outliers within each research question.

## 5.2 Review of Findings

In general, most teachers in the study wanted students to have successful and enjoyable experiences with PA. Teachers believed students' experiences in PE could have influenced students' PA self-efficacy and their future actions with PA. Teachers' descriptions of PA self-efficacy were similar to previous research (Lewis, 2014; Voskuil & Robbins, 2015). According to the teachers in the current study, having high PA self-efficacy meant that students had successful/positive experiences with PA that had resulted in students having the knowledge and confidence to design/participate in PA. Within this study, most teacher decisions were based on teachers' interpretation of the overall PE experience and their opinion of what was best for students (Bennie & Langan, 2015; Lewis, 2014). External factors such as school district policies did influence teachers' decisions; however, generally, teachers had a great deal of autonomy in the

decisions they made (Bennie & Langan, 2015). Bennie and Langan (2015) had similar results when they interviewed Australian high school PE teachers about their practices to increase student PA. They found that teachers had differing opinions on what was best for students and this influenced the decisions that they made. The teachers in the Bennie and Langan (2015) study also explained that school policies influenced some of the decisions that they made. Overall, the teachers in this study reported using more trial and error than data/research to make decisions (Jeong & So, 2020).

The main themes found for the described PE practices to support students' PA self-efficacy were the same for in-person and online instruction. Teachers in the study designed and implemented in-person/online PA experiences to assist students in successfully participating with PA (Bennie & Langan, 2015). Consistent with the findings by Bennie and Langan (2015), the teachers had a great deal of autonomy in the PA experiences that they chose to use. They controlled which PA experiences students participated in which included different manipulative skills, sports, exercise skills, dance, and low-intensity movements. Teachers also decided how PA experiences were designed. This included what choices students were given with PA, when modifications for PA were provided, and the amount of practice/gameplay that was implemented. The parameters of a successful experience with PA were also created by the teachers through their grading/assessment. A successful PA experience was either accomplished through participation with PA or performance with PA (intensity exerted/fitness test score). Teachers also decided what PA content knowledge instruction and PA management skills students would learn/participate in, which some teachers believed could influence student participation with PA and support students' PA self-efficacy (Bennie & Langan, 2015).



Teachers also had some control over the in-person/online observations that students had in PE and the social persuasion that students were provided, which some teachers believed could have influenced students' PA self-efficacy. Teachers decided who modeled PA to the whole class. At times teachers chose to model PA themselves and at other times they chose online videos to model PA. Teachers also chose how often PA modeling would happen for the whole class. For example, some teachers constantly modeled PA through participation with students while others only occasionally did this. Teachers also chose the different types of modeling experiences that students would participate in such as group discussions. The teachers also controlled how physical activities were designed, which most teachers thought could influence social comparison amongst the students. For example, teachers decided how public or private students' PA experiences were within PE and what the emphasis (fun/winning) was during competition (Carlin et al., 2015; Corr et al., 2019; Lodewyk & Muir, 2017). These factors influenced high school females' perceptions of PE activities in the Lodewyk and Muir (2017) study. The teachers in this study also controlled some of the social persuasion that students were provided within PE. Teachers decided when to provide students with encouragement, feedback, and experiences to increase social persuasion from peers or family members. Examining how the described PE practices compared to recommended practices to support PA self-efficacy identified potential areas of improvement in PE.

### 5.3 Research Question 4: Comparison of Described PE Practices to Recommended Practices

This section reviewed which described PE practices were used consistently, sporadically, and rarely. There are experiences that the majority of the teachers

implemented that align with previous research. For both in-person and online instruction, most teachers implemented progress monitoring experiences (fitness testing/activity logs) and provided PA modeling experiences (social modeling). For example, most teachers had students track their PA in activity logs while online and modeled PA for students. These strategies helped to increase participants' PA self-efficacy in the Fit for Life and CHAMP interventions (Annesi, 2006; Annesi et al., 2007; Burke et al., 2015; Martin et al., 2009). Most teachers also attempted to provide students with positive social persuasion to encourage PA and assist students in having a positive experience with PA when teaching in-person and online (Chase et al., 2018; Leisterer & Jekauc, 2019; Zhang et al., 2012). Social persuasion/support helped to increase elementary PE students' PA and was found to be significantly associated with middle school PE students' PA self-efficacy (Chase et al., 2018; Zhang et al., 2012). Other recommended practices only happened in either in-person or online PE. For example, while teaching in-person, most teachers taught a variety of physical activities and taught new skills/activities in a progression to increase the chances of initial success (Pajares, 2006; Saville et al., 2014; Trost et al., 1999). Patty described teaching students "gradually" to ensure that students were successful. Using progression to increase student success was said to have helped increase self-efficacy in youth athletes (Saville et al., 2014). Several practices were being implemented online that align with recommended practices. For example, students were being offered more choices with PA (Burke et al., 2015; Martin et al., 2009). In Austin's online PE class, students completed any PA that they wanted for their activity logs which Austin felt students enjoyed. Most teachers in the current study also had students participate in more non-competitive PA with limited social comparison while online. For

example, none of the teachers put into practice any competitions and most teachers did not have students participating in PA in front of peers. These teachers tried to limit social comparison during PA because they believed similarly to previous research that it could influence students' interpretations of their PA experiences and their participation in PA (Carlin et al., 2015; Corr et al., 2019). Most students were also allowed to choose their intensity during PA while online since participation with PA was the measure of a successful PA experience. This practice is recommended since PA autonomy in PE was significantly and positively related to intention to be physically active in Spanish high school students (Huéscar Hernández et al., 2019). Results from the current study suggested there was also an increase in teachers utilizing more instruction time for PA content knowledge and PA reflections while online. For example, Keith had students reflect on how they felt before, during, and after PA. These strategies were used in several studies and assisted in successfully increasing participants' PA self-efficacy (Annesi, 2006; Annesi et al., 2008; Annesi et al., 2005; Burke et al., 2015).

Other recommended experiences to support PA self-efficacy were only implemented by some of the teachers. There were only some teachers who put into practice experiences to improve students' understanding of the physiological changes during PA and group discussions during in-person and online instruction. For example, Jennifer had students track their heart rates during PA so that students would feel "comfortable" and less "afraid" of having to get into the target heart rate zone. Partridge et al. (2011) found that having students track their heart rate during activities increased students' understanding of the exertion needed to get themselves into the target heart rate zone which some teachers in the current study said increased some students' confidence

to be physically active. Melissa had students problem solve being physically active during online group discussions. Participants in the Fit for Life and Champ interventions shared out PA experiences in group discussions which might have contributed to the significant increases in PA self-efficacy (Annesi, 2006; Martin et al., 2009). While teaching in-person, some teachers in the current study allowed students to have choices with what physical activities they wanted to participate in, which intensity they could move at to earn their daily grade, and which modifications that they could choose from for PA. For example, Austin provided students with modifications on the track when students could not successfully complete the original task. Forcing students to participate at certain intensities could have a negative influence on PA and does not align with research that suggests providing students with choices with how to participate with PA (Leisterer & Jekauc, 2019; Lewis, 2014; Power et al., 2010; Warner et al., 2014). Some teachers in the study tried to limit social comparison during in-person activities while other teachers described actions that would enhance it. This was of interest because most teachers reported feeling that when students' skill or fitness levels were put on public display, this could have resulted in negative student feelings like "embarrassment and humiliation." For example, Melissa used the word "plague" to describe how some students felt about competition but still incorporated it into most lessons. The teachers' thoughts on students' feelings supported previous findings that reported some students feeling marginalized, self-conscious, and anxious participating in activities with enhanced social comparison like team sports and fitness testing (Carlin et al., 2015; Corr et al., 2019; Lodewyk & Muir, 2017). Some teachers attempted to normalize failure through their social persuasion and implement experiences for students to provide social

persuasion to each other while teaching in-person. For example, Jeremy told his students that learning new skills involved making mistakes. Encouraging students by teaching that failure is a normal part of the learning process is recommended to prevent decreases in PA self-efficacy when students have unsuccessful PA experiences (Pajares, 2006; Zhang et al., 2012). To increase social support from peers, some teachers had students give each other high-fives during activities. Increasing social support from peers is recommended and was found to be a better predictor of middle school students' PA than family and PE teacher support (Zhang et al., 2012).

There were also recommended practices to increase PA self-efficacy that were rarely implemented by the teachers in the study. For example, very few teachers had students create individual goals and progress monitor for those goals while teaching in-person and online. Several teachers felt similar to Jeremy who described teaching about goal setting but did not have students create individual goals. Goal setting combined with progress monitoring were used to support and increase PA self-efficacy in different studies (Annesi, 2006; Annesi et al., 2007; Burke et al., 2015; Teerarungsikul et al., 2009). Despite a slight increase in action planning to be physically active through group discussions online, this was still not a commonly used experience in-person/online to help students plan for PA outside-of-school, although it was recommended to assist in increasing PA self-efficacy (Williams & French, 2011). Trost et al. (1999) advised more low-intensity PA but only a few teachers continuously applied those PA experiences in-person. For example, Patty and Edward's students start each class walking. Furthermore, most teachers who taught in-person general education PE classes focused heavily on sports, which was similar to previous findings, but not recommended (Banville et al.,

2021; James et al., 2018; Mears, 2008). For example, Edward's in-person instructional units were primarily different team and individual sports. Also, few teachers graded the outcomes of fitness test scores in-person. For example, Loraine and Austin graded students' fitness test scores several times a year. This was not a recommended best practice and has long been deemed so by SHAPE America (2013). Fitness testing increased negative feelings associated with body form in high school females and it is recommended that fitness testing attempt to lower student anxiety associated with it (Lodewyk & Muir, 2017).

#### 5.4 Research Question 4: Comparison of In-Person and Online Practices

This study aimed to examine and compare how teachers are trying to foster students' PA self-efficacy while teaching in-person and online. By comparing the in-person and online practices to each other, the study was able to identify similarities and differences between the two types of instruction. Online PE has been a challenge for the teachers in the study and has resulted in teachers having to reshape the implemented PA experiences, PA modeling experiences, and the social persuasion provided to students (Jeong & So, 2020). This in turn has changed the students' experiences with PA in PE, which some teachers believed influenced students in positive and negative ways (Williams et al., 2020).

The teachers reported that PA experiences that students were provided changed in several ways. In-person PA experiences were primarily moderate to vigorous physical activities with few teachers implementing or encouraging low-intensity PA. This changed online as more teachers were promoting and putting into practice more low-intensity PA such as walking and stretching. Teachers also only required students to participate in

bodyweight movements that required no equipment while online. The number of choices that students had with PA also increased while online (Carone Learning, n.d.; Williams et al., 2020). Almost all the teachers used activity logs at some point online and allowed students to participate in any PA for those assignments (Carone Learning, n.d.; Williams et al., 2020). Activity logs also gave students the choice to participate in PA. For example, students could have turned in the activity log without actually participating in the PA. Some teachers pointed out that the increased amount of student decisions with PA during online instruction was beneficial for some students (Williams et al., 2020). The strategies teachers used for grading students' PA experiences also changed online. When in-person, some teachers would grade students' performance with PA which some teachers thought could influence how students interpreted their PA experience as successful or unsuccessful. In these instances, grades were either determined by the intensity level that students exerted, or their fitness test scores. While online, students' performance intensity or outcome with PA was rarely graded. As long as students participated in PA at any intensity, they received full credit for their grade. There was also no competition online which was another way that students' performance outcomes may have influenced how students interpreted their PA experiences as successful or unsuccessful in-person.

There were some similarities and differences to the implemented experiences for PA content knowledge and PA management skills. For both in-person and online instruction, approximately the same number of teachers put into practice instructional experiences to increase students' PA content knowledge and students' understanding of the physiological responses to PA. The amount of time spent on PA content knowledge

instruction increased when PE moved online since teachers thought they had more time to apply these experiences. Online instruction also increased experiences to assist students in understanding their emotions during the process (before/during/after) of PA. In both in-person and online instruction, very few teachers utilized experiences for students to practice individual goal setting and action planning for PA.

The PA modeling experiences that teachers implemented for students in-person and online also had some similarities and differences. In both situations, most teachers demonstrated PA to their students. While in-person, teacher demonstrations were primarily used to model PA to the whole class with some student modeling also occurring with some of the teachers. Teachers reported using more online videos to primarily model PA online and did not model PA themselves as often. Similar to the Carone Learning (n.d.) online PE program, the teachers in the study did not describe any circumstances where they had students model PA online for the whole class. Teachers also rarely used group discussions for students to participate in for both in-person and online instruction. The way students demonstrated participation with PA also changed for most teachers online, which reduced and at times eliminated peer observations during PA. While in-person, most teachers acknowledged that peers could observe other classmates participating in PA at any time. Most teachers acknowledged that when students observed their peers, the students were most likely making social comparisons to those peers. While online, peer observations were only present if students were on camera participating in PA at the same time, which was only implemented by some of the teachers. The lack of competition online also eliminated students from possibly comparing themselves to each other during those activities.



There were some similarities and differences to the social persuasion that students were provided while in-person and online. In both situations, the teachers were the primary providers of social persuasion (encouragement/feedback) and provided primarily positive feedback/encouragement to students. While in-person, students could be provided with social persuasion from peers and some teachers designed experiences for students to provide social persuasion to each other. This peer social persuasion was no longer available to students during online instruction since students were not engaging with each other while participating with PA. Some teachers acknowledged that parent social persuasion increased in importance during online instruction. Teachers explained that encouragement was easily provided to students when in-person and much more of a challenge when online (Jeong & So, 2020). Most teachers felt that students had to use more self-regulation to participate in PA online because of the lack of encouragement to be physically active from teachers (Williams et al., 2020). Teachers described that building positive relationships with students was easier when in-person and happened more naturally because teachers and students were physically around each other. During online instruction, these relationships were not as easily formed and there were some barriers to connecting with students (Jeong & So, 2020). Some barriers included students not showing up for class, not turning their camera on, and asynchronous class time. The feedback that was provided to students online also changed based on the PA experiences implemented by teachers and how teachers graded student PA. While in-person, many of the physical activities that students participated in were performance-based (sports, games, fitness testing) and therefore teachers provided students with feedback based on performance. Online, the physical activities that students participated in were

participation-based and rarely depended on student performance. Therefore, teachers' feedback online focused on praising participation and not on the students' performance with the PA.

The sudden move from in-person to online instruction resulted in many changes to the PA experiences that students were provided in PE (Jeong & So, 2020). Teachers had to change which physical activities students would participate in, how students would demonstrate participation with PA, and how PA experiences were designed. The observations that students were provided also changed when instruction moved online. Students no longer modeled PA to their classmates and most teachers primarily relied on online videos to model PA to the students. There was limited peer social comparison due to students not seeing each other participate in PA that often and the absence of competition. The social persuasion that teachers provided to students also changed when instruction moved from in-person to online. Teachers struggled to connect with students online and thought it was difficult to encourage students to be physically active. Despite many teachers explaining how online PE had benefited some of their students, almost all the teachers thought that in-person PE would still be the best type of instruction for students. A further analysis of in-person/online practices, and these practices potential influence on students' PA self-efficacy, is provided below.

## 5.5 Analysis of the Results

This analysis examined several findings through the lens of self-efficacy and the framework of social cognitive theory (Bandura, 1997). First, teachers controlled the behaviors that students participated in. For example, goal setting was found in several studies to help increase PA self-efficacy yet was rarely used by teachers in the study

(Annesi, 2006; Annesi et al., 2007; Burke et al., 2015; Williams & French, 2011). Some teachers felt similar to Jeremy who explained that he taught about goal setting but never made his students have to set goals. These teachers were using their instruction to model goal setting (environmental factor/vicarious experience) to motivate students (personal factor) to engage in goal setting (behavior). This process did not ensure that students engaged in goal setting and left the decision to engage in that behavior to the students. Furthermore, a modeled behavior (vicarious experience) would be less likely to increase a student's self-efficacy than a successful experience (mastery experience) with a behavior (Bandura, 1997; Joët et al., 2011; Warner et al., 2014). The teachers (environmental factor) in this study controlled almost all of the experiences (behaviors) that students participated in and could have ensured that students participated in goal setting (behavior), which might have had a greater influence on students' PA self-efficacy (personal factor).

Teachers in this study primarily controlled how PA experiences were designed, which they believed could influence many factors associated with students' PA self-efficacy. Teachers decided which choices students would have with each PA experience, how success (grade) would be measured for each PA experience, and what the emphasis (winning/improvement/performance) of each PA experience was. According to social cognitive theory, these decisions could have influenced students' PA self-efficacy beliefs in different ways (Bandura, 1997). Similar to previous research, teachers in the study provided students with choices to increase student enjoyment, comfort, and increase the likelihood of success (Leisterer & Jekauc, 2019; Lewis, 2014; Robbins et al., 2010; Tudor et al., 2018). Choices (environmental factor) were provided to students to lower

anxiety (personal factor) and increase the chances of student success with tasks (behavior). In theory, all this information would be processed by the student and influence their self-efficacy beliefs (Bandura, 1997). In another example, some teachers in the study graded (environmental factor) students' fitness tests (environmental factor) which were performed (behavior) in class while peers were present (environmental factor). Most teachers in this study acknowledged that engaging in PA in front of peers, which is contingent on performance outcomes, can heighten anxiety and influence participation with PA (Carlin et al., 2015; Corr et al., 2019; Lodewyk & Muir, 2017; Tudor et al., 2018). This environmental factor (graded fitness test) could influence students' anxiety (personal factor) and decrease the chances of student success (grade/environmental factor) due to success being based on students' level of fitness (personal factor). Again, all the information would be interpreted by students and influence PA self-efficacy. How teachers in this study designed PA experiences could have influenced students' PA self-efficacy beliefs in many ways (Bandura, 1997).

Teachers in this study designed the structured PA modeling experiences for students which some teachers believed could influence students' PA self-efficacy. Participants in multiple studies described how observing a teacher, coach or peer participate in PA increased their PA self-efficacy (Gavin et al., 2016; Kosteli et al., 2016; Lirgg & Feltz, 1991; Saville et al., 2014). Teachers in this study chose who would model PA to the whole class, when whole group modeling opportunities occurred, which modeling experiences students participated in, and how public/private physical activities were for students. Teachers also decided when they would participate in physical activities with students. Participation is a form of modeling (environmental

factor/vicarious experience) which some teachers thought could impact students' perceptions (personal factor) of their PE teacher and the PA itself (Bandura, 1997). These perceptions might also influence students' actions in PE and future actions with PA (behavior). Within this study, Loraine did not participate in fitness testing with the students and the students noticed. Loraine's failure to model that PA experience (environmental factor) could have potentially caused students to perceive (personal factor) that PA as unenjoyable since the teacher would not participate in it. This inaction by the teacher might influence students participating in that type of PA in the future (behavior). Another modeling experience that could have potentially influenced students' personal factors and behaviors was teachers/students modeling successful or unsuccessful PA performance outcomes to students. Most research describes modeling successful performances with a skill to increase self-efficacy (Bandura, 1997; Gavin et al., 2016; Kosteli et al., 2016; Lirgg & Feltz, 1991; Saville et al., 2014). Two teachers in the study mentioned that when some students observed a teacher or peer model an unsuccessful PA experience (environmental factor/vicarious experience), this increased those students' confidence to participate in those activities and made the students feel more comfortable participating (personal factor). This unsuccessful modeling experience might have influenced students' perceptions of the learning process (failure is normal) and lowered student anxiety associated with participating in that PA experience. According to the teachers in the study, these teacher actions resulted in student participation (behavior). These examples stress the importance of how and when modeling experiences are provided in PE and the potential impacts the modeling experiences have on students' personal factors and behavior.

Lastly, teachers' decisions in this study influenced the social persuasion that students were provided within PE. Teachers had the opportunity to provide students with feedback, encouragement, and nonverbal encouragement (high-fives). The teachers also implemented experiences for students to provide social persuasion to each other. Several studies found that providing students/participants with social persuasion can increase/support PA self-efficacy (Annesi, 2006; Burke et al., 2015; Saville et al., 2014; Zhang et al., 2012). While online, most teachers described the challenge of encouraging students to be physically active (Jeong & So, 2020). For example, most teachers thought that the lack of online encouragement (environmental factor/social persuasion) in the moment before/during PA might have influenced students' participation with PA (behavior). Encouragement might also have influenced students' perceptions of their capabilities to perform a PA. For example, youth athletes said that verbal encouragement ("you got this") increased their self-efficacy to perform a task at that moment (Saville et al., 2014). In the current study, Edward described providing his students with "fake praise" (environmental factor) to increase their confidence (personal factor) to participate in a PA experience (behavior). According to the teachers in the study, the social persuasion (environmental factor) that they provide can influence students' personal factors and behaviors.

The teachers in the study thought that their decisions could have influenced students' personal factors and behaviors. When thinking like this, all teacher decisions could then be considered a potential intervention that might cause a behavior change (Cohen et al., 2017). Teachers controlled many of the environmental factors within PE that could potentially influence students' personal factors (self-efficacy) and PA

experiences (behaviors). Thinking of teachers' decisions as mini-interventions that could have influenced different student factors (PA self-efficacy/PA) could be beneficial when designing future decisions within PE.

## 5.6 Recommended Online Physical Education Practices

The recommended practices below considered how self-efficacy is developed and action is decided through social cognitive theory (Bandura, 1997). As stated above, the teachers in the study thought their decisions (environmental factors) could have influenced students' personal factors (PA self-efficacy) and PA experiences (behaviors). Bandura (1997) described the development of self-efficacy as an individual's interpretation of the four sources of self-efficacy. This emphasizes what PA experiences students participate in and how students interpret their PA experiences in PE as successful and enjoyable. Based on the current findings, primarily teachers controlled the parameters of a successful experience with PA through their grading/assessment while in-person/online. To assist students in interpreting their PA experiences as successful, it is recommended that participation with PA at any intensity level or performance outcome be considered a successful PA experience. After this initial success, students could be challenged, but not forced to go past their initial level of comfort/success. This provides students the autonomy to participate in PA at their level of intensity/challenge and can help normalize failure, which can lower student anxiety towards PA and increase student satisfaction (Leisterer & Jekauc, 2019; Lodewyk & Muir, 2017; Robbins et al., 2010). Teachers could also consider what PA experiences provide their students with the best chances based on research to increase PA self-efficacy and PA outside-of-school. Many studies have had success increasing participants' PA and PA self-efficacy by having

participants engage in PA management skills (Annesi, 2006; Burke et al., 2015; Williams & French, 2011). Since teachers chose (environmental factor) what PA experiences students participated in (behavior) within the study, it is advised that teachers implement more experiences with PA management skills. For example, students could measure their PA outside-of-school, reflect on their PA, action plan ways to be physically active with peer/teacher support, set a personal PA goal, and then measure PA again. This could continue to repeat itself to guide students through the problem-solving process of continuous engagement in PA (Corbin et al., 2016). For these reasons, it is recommended that more emphasis is on assisting students in the transfer of PA experiences/learning within PE, to outside of PE, by providing students with experiences with PA management skills (Williams & French, 2011). Furthermore, to assist students in increasing motor competence online, students could create more videos where they have to explain how to perform certain movement skills (Carone Learning, n.d.). Teachers could then provide more specific feedback on the movements in hopes of increasing student competence and PA self-efficacy (Williams & French, 2011; Saville et al., 2014).

When students observed (environmental factor) the teacher, other students, or community members, teachers in the current study believed it could have influenced students' PA self-efficacy (personal factor) and PA (behavior). It is recommended that students observe both successful and unsuccessful PA experiences since some teachers in the study believed both would benefit students. Furthermore, teachers modeling more unsuccessful PA experiences might support more low-skill students feeling comfortable performing PA and normalize failure. An increase in student modeling would also be advised since some studies have found that participants mentioned vicarious experiences



that involved peers that were similar in age/abilities (Gavin et al., 2016; Kosteli et al., 2016). To increase peer modeling experiences online, students could be encouraged to design and lead PA for the class or in small groups (breakout rooms). Group discussions can also be a way for students to increase their PA self-efficacy and allow students to observe other students' explanation of strategies for being physically active or of PA knowledge (Annesi et al., 2005, Burke et al., 2015). It is also recommended that students participate in group discussions in small groups to lower social comparison. To help accomplish this online, teachers can arrange for students to meet in their groups in separate breakout rooms to discuss overcoming barriers to PA and sharing success stories with PA. Observations can result in increased student understanding and students feeling more comfortable/confident performing PA in PE (Annesi et al., 2007; Lirgg & Feltz, 1991; Pajares, 2006).

It is also recommended that teachers consider social comparison when deciding if students should participate in PA live on camera while online. The teachers that had the most participation with live on camera PA allowed students to minimize visibility on camera but required all students to be on camera. While more examination of student perceptions of this practice is recommended, the teachers believed this lowered social comparison since all students were on camera and participated at the same time. This practice could also prevent students from filming other students which was a concern that a few teachers mentioned. Another practice would be to allow students to choose to attend one PA class from a list of different PA classes throughout the day. For example, PE teachers or a PE program at a school might offer a yoga session in the morning, high-intensity interval training around lunch, and a dance class in the afternoon. Students

would then be offered the chance to choose what class they want to attend and engage in live online. This would provide students the autonomy to choose a class that they are interested in and still offer a variety of PA offerings (Carone Learning, n.d.; Trost et al., 1999). Since teachers in the study believed their decisions could have influenced students' personal factors and behavior, it is recommended that PE teachers consider how their actions and the PA experiences that students participate in/observe will be interpreted by students. Using theory and research of best practices to increase PA self-efficacy is advised and can help ensure that more supportive PA self-efficacy practices are put into practice.

#### 5.7 Limitations and Future Research

A limitation of the study was the moderate sample size which resulted in a snapshot of only a small population of PE teachers in the United States. Other possible limitations included a brief time frame for participant recruitment, two participants that personally knew the PI, and that participants were only interviewed one time. Prolonging participant recruitment may have produced a larger sample size that did not include any teachers that the PI personally knew. Another potential limitation might have been participants answering questions in socially desirable ways. Future research can combine observations with interviews to examine if described practices concur with observed practices. Finally, interviewing participants multiple times may have resulted in the researcher asking follow-up questions for a better understanding of participant viewpoints that were mentioned in previous interviews.

It is recommended that future research examine students' interpretations of PA and PA self-efficacy within high school PE. These data are not available for the current

study. Exploring student experiences associated with the four sources of self-efficacy and their beliefs regarding best experiences to increase PA self-efficacy in PE would shed light on teacher and student interpretations. This study was also just a brief examination of only a small number of online PE programs that are being implemented across the United States. It is recommended that future research expand on this study and also include pre-existing online PE programs. Programs that are specifically designed to be online might offer more insight into different experiences for students to help support PA self-efficacy. Future research can also examine how certain experiences like goal setting can influence students' PA self-efficacy when put into high school PE classes. There is an overall need for more research on how PE programs can influence students' PA self-efficacy because of its known relationship with PA (Annesi, 2006; Annesi et al., 2008; Nock et al., 2016).

## 5.8 Contribution to the Literature

Based on the results and discussion, this body of work contributed to research on PA self-efficacy in several ways. First, the results identified practices that are being implemented based on the four sources of self-efficacy within in-person/online PE. These examples can provide current PE teachers with different ideas on how to support PA self-efficacy within high school PE and can guide future research interventions for PA self-efficacy. Another strength of this study was the comparison of in-person PE practices to online PE practices. The differences that are identified in this study between in-person and online instruction might influence future practices within PE and future research on PA self-efficacy. This study also provides a better understanding of how some teachers are making decisions in PE. The results from this study are the first step in identifying the

possible strengths and weaknesses of current PE practices to support PA self-efficacy, which could be used to delineate specific strategies and best practices for teachers. In sum, this study initiates a line of inquiry that is needed to better position PE as a PA intervention with lasting impact through its influence on student PA self-efficacy.

## 5.9 Conclusion

It is widely believed that students' self-efficacy beliefs are largely influenced by their interpretations of the four sources of self-efficacy (Bandura, 1997; Joët et al., 2011; Saville et al., 2014; Usher, 2009). For these reasons, teachers' decisions should be carefully planned out and consider how experiences are going to be interpreted by students as to ensure the impact on PA self-efficacy is maximized. For the teachers in this study, external factors had some varying degree of influence on teachers' decisions; however, decisions were mostly based on teachers' interpretations of the overall PE experience. This resulted in a wide range of experiences that could potentially increase/decrease students' PA self-efficacy. The findings in this study emphasized the importance of the experiences that students are provided within PE since teachers in this study believed, and previous research has found, that interventions can influence PA self-efficacy and future actions with PA (Annesi, 2006; Annesi et al., 2007; Burke et al., 2015; Gavin et al., 2016). It is recommended that teachers' decisions be based more on research than just teacher interpretations of PE to assist in ensuring that PE practices are more aligned to recommended practices in the literature to support student PA self-efficacy.

## APPENDIX

### TEACHER INTERVIEW QUESTIONS

(Recording). Hello. Thank you for agreeing to be in the study. I just want to remind you that all your personal information will be kept confidential. Your name will be changed, and the only identifiable information will be how many years you have taught.

So, before we begin the interview, did you read and understand the consent form?

Do you have any questions?

Do you understand that you can skip any questions that you like?

Are you ready to get started and officially consent to be in the study?

The questions will ask about teaching strategies that you use in the gym when teaching in-person and then online. You should not mention the name of your school, colleagues, or students when answering the questions. (Pause). Sounds good?

1. So, I have been teaching physical education for 13 years. Most of my time was in Kindergarten through eighth grade. My last five years I have been teaching at the college level. I have taught in Chicago, Phoenix, Kansas, and now Kentucky. I want to eventually get a job at a college and help train future physical education teachers. How about you?
  - a. So how many years have you taught physical education? Have all of your years been in high school physical education?
2. How much physical education do students have to take at your high school?
3. What elective physical education classes do you have at your high school? What are they?

4. Why did you get into physical education? What do you like best about physical education?
5. Walk me through a typical physical education class in the gym? Why do you set up class that way?
  - a. Ask follow-up questions as they come up for any of the sources of self-efficacy.
6. What would you say are some of the most important things for students to experience in your in-person physical education class and why?
  - a. Follow-up: What skills, concepts, experiences are most meaningful to students.
7. Walk me through a typical physical education class online? Why do you set up class that way?
  - a. Ask follow-up questions as they come up for any of the sources of self-efficacy.
8. What would you say are some of the most important things for students to experience in your online physical education class and why?
9. Follow-up: What skills, concepts, experiences are most meaningful to students.
10. How would you describe your students' confidence to be physically active? In your opinion, what affects students' confidence to be physically active?
11. Thinking of teaching in the gym first. If you have a student with very little confidence to be physically active, what types of experiences, activities, or skills would you want that student to learn or participate in and why? How are these experiences similar or different when teaching online?

Follow-up questions to ask if participant does not bring up in conversation.

12. (If needed): How would you describe students' attitudes and feelings towards physical activity? In your opinion, how does physical education affect students' attitudes/feelings towards physical activity?
  - a. Follow-up: Do they enjoy or not enjoy physical activity?
13. If you have a student who has developed a negative attitude towards physical activity, what experiences would you want them to have in your in-person physical education class and why? How are these experiences similar or different when teaching online?
14. What do you say to students about physical activity; what do you want students to know about physical activity? What activities and experiences help to accomplish this?
15. Can you give an example of an observation that students would have in the gym that would increase their confidence to be physically active? An observation could be of another person or peer participating, demonstrating, or speaking.
16. What types of observations are students seeing online to help with this?
17. How do you think competition affects students' confidence to be physically active?
18. Based on your answer, how do you design competitive activities in the gym or online?
19. How would students describe your teaching style?
  - a. Follow-up (if needed): Are you more of a strict teacher or easy going?

20. How is your teaching style similar or different when teaching online? How do you think your teaching style affects students' confidence to be physically active?
21. What kind of choices do students have in your in-person and online physical education classes? Why is your class set-up that way?
  - a. Follow-up (if needed): Students might be offered choices when it comes to the intensity of physical activity, modifications for physical activity, ways to practice physical activity, or choices for the type of gameplay they do.
22. What are you saying to students while they are physically active in the gym?
23. Is there anything that you would like to add that I did not ask about?

This has been great. Thank you for your time.



## REFERENCES

- Alert, M. D., Saab, P. G., Llabre, M. M., & McCalla, J. R. (2019). Are self-efficacy and weight perception associated with physical activity and sedentary behavior in Hispanic adolescents? *Health Education & Behavior, 46*(1), 53-62.  
<https://doi.org/10.1177/1090198118788599>
- Annesi, J. J. (2006). Relations of physical self-concept and self-efficacy with frequency of voluntary physical activity in preadolescents: Implications for after-school care programming. *Journal of Psychosomatic Research, 61*(4), 515-520.  
<https://doi.org/10.1016/j.jpsychores.2006.04.009>
- Annesi, J. J., Faigenbaum, A. D., Westcott, W. L., & Smith, A. E. (2008). Relations of self-appraisal and mood changes with voluntary physical activity changes in African American preadolescents in an after-school care intervention. *Journal of Sports Science & Medicine, 7*(2), 260-268.
- Annesi, J. J., Faigenbaum, A. D., Westcott, W. L., Smith, A. E., Unruh, J. L., & Hamilton, F. G. (2007). Effects of the Youth Fit for Life protocol on physiological, mood, self-appraisal, and voluntary physical activity changes in African American preadolescents: Contrasting after-school care and physical education formats. *International Journal of Clinical Health & Psychology, 7*(3), 641-659.
- Annesi, J. J., Westcott, W. L., Faigenbaum, A. D., & Unruh, J. L. (2005). Effects of a 12-week physical activity protocol delivered by YMCA after-school counselors (Youth Fit for Life) on fitness and self-efficacy changes in 5–12-year-old boys and girls. *Research Quarterly for Exercise and Sport, 76*(4), 468-476.

- Ashford, S., Edmunds, J., & French, D. P. (2010). What is the best way to change self-efficacy to promote lifestyle and recreational physical activity? A systematic review with meta-analysis. *British Journal of Health Psychology, 15*(2), 265-288. <https://doi.org/10.1348/135910709X461752>
- Azar, D., Naughton, G. A., & Joseph, C. W. (2009). Physical activity and social connectedness in single-parent families. *Leisure Studies, 28*(3), 349-358. <https://doi.org/10.1080/02614360903046656>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.
- Bandura, A. (1998). Personal and collective efficacy in human adaptation and change. In J. G. Adair, D. Belanger, & K. L. Dion (Eds.), *Advances in psychological science: Vol. 1. Personal, social and cultural aspects* (pp. 51-71). Hove, UK: Psychology Press.
- Bandura, A. (2006). Guide for constructing self-efficacy scales. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents: Vol. 1.* (pp. 307-337). Greenwich, CT: Information Age Publishing.
- Banville, D., Marttinen, R., Kulinna, P. H., & Ferry, M. (2021). Curriculum decisions made by secondary physical education teachers and comparison with students' preferences. *Curriculum Studies in Health and Physical Education, 1-28*.
- Barber, J. P., & Walczak, K. K. (2009, April). Conscience and critic: Peer debriefing strategies in grounded theory research. *In Annual Meeting of the American Educational Research Association, San Diego, CA*.
- Barr-Anderson, D. J., Young, D. R., Sallis, J. F., Neumark-Sztainer, D. R., Gittelsohn, J., Webber, L., Saunders, R., Cohen, S., & Jobe, J. B. (2007). Structured physical

- activity and psychosocial correlates in middle-school girls. *Preventive Medicine*, 44(5), 404-409. <https://doi.org/10.1016/j.ypmed.2007.02.012>
- Bauman, A. E., Reis, R. S., Sallis, J. F., Wells, J. C., Loos, R. J., & Martin, B. W. (2012). Correlate of physical activity: Why are some people physically active and others not? *The Lancet*, 380(9838), 258-271. [https://doi.org/10.1016/S0140-6736\(12\)60735-1](https://doi.org/10.1016/S0140-6736(12)60735-1)
- Beni, S., Fletcher, T., & Ní Chróinín, D. (2017). Meaningful experiences in physical education and youth sport: A review of the literature. *Quest*, 69(3), 291-312.
- Bennie, A., & Langan, E. (2015). Physical activity during physical education lessons: A qualitative investigation of Australian PE teacher perceptions. *International Journal of Qualitative Studies in Education*, 28(8), 970-988.
- Bergen, N., & Labonté, R. (2020). “Everything is perfect, and we have no problems”: Detecting and limiting social desirability bias in qualitative research. *Qualitative Health Research*, 30(5), 783-792. <https://doi.org/10.1177/1049732319889354>
- Blanchard, C., Arthur, H. M., & Gunn, E. (2015). Self-efficacy and outcome expectations in cardiac rehabilitation: Associations with women’s physical activity. *Rehabilitation Psychology*, 60(1), 59–66. <https://doi.org/10.1037/rep0000024>
- Blanchard, C. M., Fortier, M., Sweet, S., O'Sullivan, T., Hogg, W., Reid, R. D., & Sigal, R. J. (2007). Explaining physical activity levels from a self-efficacy perspective: The physical activity counseling trial. *Annals of Behavioral Medicine*, 34(3), 323-328. <https://dx.doi.org/10.1080/08836610701677857>

- Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Sage.
- Burke, S. M., Vanderloo, L. M., Gaston, A., Pearson, E. S., & Tucker, P. (2015). An examination of self-reported physical activity and physical activity self-efficacy among children with obesity: Findings from the Children's Health and Activity Modification Program (CHAMP) pilot study. *RETOS. Nuevas Tendencias en Educación Física, Deporte y Recreación*, (28), 212-218.
- Campbell, N., Gray, C., Foley, L., Maddison, R., & Prapavessis, H. (2016). A domain-specific approach for assessing physical activity efficacy in adolescents: From scale conception to predictive validity. *Psychology of Sport and Exercise*, 22, 20-26. <https://doi.org/10.1016/j.psychsport.2015.05.002>
- Carlin, A., Murphy, M. H., & Gallagher, A. M. (2015). Current influences and approaches to promote future physical activity in 11–13 year olds: A focus group study. *BMC Public Health*, 15(1), 1270. <https://doi.org/10.1186/s12889-015-2601-9>
- Carone Learning. (n.d.). *Power of Online PE*. Retrieved May 3, 2021, from <https://caronelearning.com/courses/how-online-pe-works/>
- Carter, R. C. (2002). The impact of public schools on childhood obesity. *Jama*, 288(17), 2180-2180. <https://doi.org/10.1123/jpah.2014-0578>
- Caspersen, C. J., Pereira, M. A., & Curran, K. M. (2000). Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Medicine & Science in Sports & Exercise*, 32(9), 1601-1609.

- Centers for Disease Control and Prevention (2014). *State Indicator Report on Physical Activity, 2014*. U.S. Department of Health and Human Services.  
[https://www.cdc.gov/physicalactivity/downloads/PA\\_State\\_Indicator\\_Report\\_2014.pdf](https://www.cdc.gov/physicalactivity/downloads/PA_State_Indicator_Report_2014.pdf)
- Chase, B., Hall, M., & Brusseau, T. A. (2018). Impact of goal setting on physical activity in physical education. *Journal of Physical Education and Sport, 18*(2), 757-761.  
<http://dx.doi.org/10.7752/jpes.2018.02111>
- Chiviacowsky, S., & Wulf, G. (2007). Feedback after good trials enhances learning. *Research Quarterly for Exercise and Sport, 78*, 40-47.  
<https://doi.org/10.1080/02701367.2007.10599402>
- Cohen, G. L., Garcia, J., & Goyer, J. P. (2017). Turning point: Targeted, tailored, and timely psychological intervention. In A. Elliot, C. S. Dweck, & D. S. Yeager (Eds.), *Handbook of competence and motivation: Theory and application* (2nd ed., pp. 657-686). New York, NY: Guilford Press.
- Cooper, A. R., Goodman, A., Page, A. S., Sherar, L. B., Esliger, D. W., van Sluijs, E. M., Anderson, L. B., Anderssen, S., Cardon, G., Davey, R., Froberg, K., Hallal, P., Janz, K. F., Kordas, K., Kreimler, S., Pate, R. R., Puder, J. J., Reilly, J. J., Salmon, J., Sardinha, L. B., Timperio, A., & Ekelund, U. (2015). Objectively measured physical activity and sedentary time in youth: The International children's accelerometry database (ICAD). *International Journal of Behavioral Nutrition and Physical Activity, 12*(1), 1-10. <https://doi.org/10.1186/s12966-015-0274-5>

- Corbin, C.B, Welk, G.J., Corbin, W.R. & Welk, K. (2016). *Concepts of physical fitness: Active lifestyles for wellness, 17th ed.* McGraw-Hill Education.
- Corr, M., McSharry, J., & Murtagh, E. M. (2019). Adolescent girls' perceptions of physical activity: A systematic review of qualitative studies. *American Journal of Health Promotion, 33*(5), 806-819. <https://doi.org/10.1177/0890117118818747>
- Craggs, C., Corder, K., van Sluijs, E. M., & Griffin, S. J. (2011). Determinants of change in physical activity in children and adolescents: A systematic review. *American Journal of Preventive Medicine, 40*(6), 645-658. <https://dx.doi.org/10.1016/j.amepre.2011.02.025>
- Cushing, C. C., Brannon, E. E., Suorsa, K. I., & Wilson, D. K. (2014). Systematic review and meta-analysis of health promotion interventions for children and adolescents using an ecological framework. *Journal of Pediatric Psychology, 39*(8), 949-962.
- Darker, C. D., French, D. P., Eves, F. F., & Sniehotta, F. F. (2010). An intervention to promote walking amongst the general population based on an 'extended' theory of planned behavior: A waiting list randomized controlled trial. *Psychology of Health, 25*, 71-88. <https://doi.org/10.1080/08870440902893716>
- David, P., Pennell, M. L., Foraker, R. E., Katz, M. L., Buckworth, J., & Paskett, E. D. (2014). How are previous physical activity and self-efficacy related to future physical activity and self-efficacy? *Health Education & Behavior, 41*(6), 573-576. <https://doi.org/10.1177/1090198114543004>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* Springer Science & Business Media.

- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination in human behavior. *Psychological Inquiry*, *11*(4), 227-268.
- Deforche, B., De Bourdeaudhuij, I., Tanghe, A., Hills, A. P., & De Bode, P. (2004). Changes in physical activity and psychosocial determinants of physical activity in children and adolescents treated for obesity. *Patient Education and Counseling*, *55*(3), 407-415. <https://doi.org/10.1016/j.pec.2003.07.012>
- De Meester, A., Maes, J., Stodden, D., Cardon, G., Goodway, J., Lenoir, M., & Haerens, L. (2016). Identifying profiles of actual and perceived motor competence among adolescents: Associations with motivation, physical activity, and sports participation. *Journal of Sports Sciences*, *34*(21), 2027-2037.
- Dishman, R. K., Hales, D. P., Pfeiffer, K. A., Felton, G. A., Saunders, R., Ward, D. S., Dowda, M., & Pate, R. R. (2006). Physical self-concept and self-esteem mediate cross-sectional relations of physical activity and sport participation with depression symptoms among adolescent girls. *Health Psychology*, *25*(3), 396. <https://doi.org/10.1037/0278-6133.25.3.396>
- Dudley, D., Okely, A., Pearson, P., & Cotton, W. (2011). A systematic review of the effectiveness of physical education and school sport interventions targeting physical activity, movement skills and enjoyment of physical activity. *European Physical Education Review*, *17*, 353–378.
- Dzewaltowski, D. A., Karteroliotis, K., Welk, G., Johnston, J. A., Nyaronga, D., & Estabrooks, P. A. (2007). Measurement of self-efficacy and proxy efficacy for

- middle school youth physical activity. *Journal of Sport and Exercise Psychology*, 29(3), 310-332.
- Fairclough, S. Stratton, G., & Baldwin, G. (2002). The contribution of secondary school physical education to lifetime physical activity. *European Physical Education Review*, 8, 69-84. <http://dx.doi.org/10.1177/1356336X020081005>
- Fernhall, B., & Agiovlasitis, S. (2008). Arterial function in youth: window into cardiovascular risk. *Journal of Applied Physiology*, 105(1), 325-333.
- Fisher, R. J. (1993). Social desirability bias and the validity of indirect questioning. *Journal of Consumer Research*, 20(2), 303-315. <https://doi.org/10.1086/209351>
- Fitzgerald, A., Fitzgerald, N., & Aherne, C. (2012). Do peers matter? A review of peer and/or friends' influence on physical activity among American adolescents. *Journal of Adolescence*, 35(4), 941-958.
- Fredriksson, S. V., Alley, S. J., Rebar, A. L., Hayman, M., Vandelanotte, C., & Schoeppe, S. (2018). How are different levels of knowledge about physical activity associated with physical activity behaviour in Australian adults? *PLoS One*, 13(11), e0207003. <https://doi.org/10.1371/journal.pone.0207003>
- Gallahue, D. L. & Ozmun, J. C. (2006). *Understanding motor development: Infants, children, adolescents, adults, 6<sup>th</sup> edition*. Mcgraw-hill.
- Gao, Z., Newton, M., & Carson, R. L. (2008). Students' motivation, physical activity levels, & health-related physical fitness in middle school physical education. *Middle Grades Research Journal*, 3(4), 21-39. <https://eric.ed.gov/?id=EJ832305>



- Gavin, J., McBrearty, M., Malo, K. I. T., Abravanel, M., & Moudrakovski, T. (2016). Adolescents' perception of the psychosocial factors affecting sustained engagement in sports and physical activity. *International Journal of Exercise Science*, 9(4), 384-411. <https://pubmed.ncbi.nlm.nih.gov/27766129/>
- Grim, M., Petosa, R., Hertz, B., & Hunt, L. (2013). Formative evaluation of MyFit: A curriculum to promote self-regulation of physical activity among middle school students. *American Journal of Health Education*, 44(2), 81-87. <https://doi.org/10.1080/19325037.2013.764238>
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? *Field Methods*, 18(1), 59-82. <https://doi.org/10.1177/1525822X05279903>
- Guh, D. P., Zhang, W., Bansback, N., Amarsi, Z., Birmingham, C. L., & Anis, A. H. (2009). The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis. *BMC Public Health*, 9(1), 1-20.
- Gunter, K. B., Almstedt, H. C., & Janz, K. F. (2012). Physical activity in childhood may be the key to optimizing lifespan skeletal health. *Exercise and Sport Sciences Reviews*, 40(1), 13-21.
- Haerens, L., Kirk, D., Cardon, G. et al. (2010). Motivational Profiles for Secondary School Physical Education and Its Relationship to the Adoption of a Physically Active Lifestyle among University Students. *European Physical Education Review*, 16, 117-139. <http://dx.doi.org/10.1177/1356336X10381304>
- Hamilton, K., Warner, L. M., & Schwarzer, R. (2017). The role of self-efficacy and friend support on adolescent vigorous physical activity. *Health Education & Behavior*, 44(1), 175-181. <https://doi.org/10.1177/1090198116648266>

- Hewer, R., Smith, K., & Fergie, G. (2019). The social functionality of humor in group-based research. *Qualitative Health Research, 29*, 431–444.  
<https://doi.org/10.1177/1049732318800675>
- Horne, P. J., Hardman, C. A., Lowe, C. F., & Rowlands, A. V. (2009). Increasing children's physical activity: A peer modelling, rewards and pedometer-based intervention. *European Journal of Clinical Nutrition, 63*(2), 191-198.  
<http://dx.doi.org/10.1038/sj.ejcn.1602915>
- Hortz, B., Petosa, R. L., Grim, M. L., & Stevens, E. (2015). Building self-efficacy for exercise among rural high school students: It takes ongoing practice. *American Journal of Health Education, 46*(6), 351-356.
- Huéscar Hernández, E., Moreno-Murcia, J. A., Ruíz González, L., & León González, J. (2019). Motivational profiles of high school physical education students: The role of controlling teacher behavior. *International Journal of Environmental Research and Public Health, 16*(10), 1714-1727.
- Jackson, B., Myers, N. D., Taylor, I. M., & Beauchamp, M. R. (2012). Relational efficacy beliefs in physical activity classes: A test of the tripartite model. *Journal of Sport and Exercise Psychology, 34*(3), 285-304.  
<https://doi.org/10.1123/jsep.34.3.285>
- James, M. Todd, C., Scott, S., Stratton, G., McCoubrey, S., Christian, D., Halcox, J., Audrey, S., Ellins, E., Anderson, S., Copp, I., & Brophy, S. (2018). Teenage recommendations to improve physical activity for their age group: A qualitative study. *BMC Public Health, 18*(1), 372. [https://doi.org/10.1186/s12889-018-5274-](https://doi.org/10.1186/s12889-018-5274-3)

- Jamner, M. S., Spruijt-Metz, D., Bassin, S., & Cooper, D. M. (2004). A controlled evaluation of a school-based intervention to promote physical activity among sedentary adolescent females: Project FAB. *Journal of Adolescent Health, 34*(4), 279-289.
- Jeong, H. C., & So, W. Y. (2020). Difficulties of online physical education classes in middle and high school and an efficient operation plan to address them. *International Journal of Environmental Research and Public Health, 17*(19), 7279-7291.
- Joët, G., Usher, E. L., & Bressoux, P. (2011). Sources of self-efficacy: An investigation of elementary school students in France. *Journal of Educational Psychology, 103*(3), 649-663.
- Johnson, C. C., Li, D., Epping, J. N., Lytle, L. A., Cribb, P. W., Williston, B. J., & Yang, M. (2000). A transactional model of social support, self-efficacy and physical activity of children in the Child and Adolescent Trial for Cardiovascular Health. *Journal of Health Education 31*(1), 2-9.  
<https://doi.org/10.1080/10556699.2000.10608640>
- Johnson, K. E., Kubik, M. Y., & McMorris, B. J. (2011). Prevalence and social-environmental correlates of sports team participation among alternative high school students. *Journal of Physical Activity and Health 8*(5), 606–612.  
[http://journals.humankinetics.com/AcuCustom/Sitename/Documents/DocumentItem/02\\_johnson\\_JPAH\\_20090242.pdf](http://journals.humankinetics.com/AcuCustom/Sitename/Documents/DocumentItem/02_johnson_JPAH_20090242.pdf)

- Kaewthummanukul, T., & Brown, K. C. (2006). Determinants of employee participation in physical activity: Critical review of the literature. *Aaohn Journal*, 54(6), 249-261. <https://doi.org/10.1177/216507990605400602>
- Keats, M. R., Emery, C. A., & Finch, C. F. (2012). Are we having fun yet? *Sports Medicine* 42(3), 175–184. <https://doi.org/10.2165/11597050-000000000-00000>
- Ketteridge, A., & Boshoff, K. (2008). Exploring the reasons why adolescents participate in physical activity and identifying strategies that facilitate their involvement in such activity. *Australian Occupational Therapy Journal*, 55(4), 273-282. <https://doi.org/10.1111/j.1440-1630.2007.00704.x>
- Kirkpatrick, B., & Birnbaum, B.H. (1997). *Lessons from the heart- Individualizing physical education with HRM's*. Human Kinetics.
- Knowles, A. M., Niven, A., & Fawkner, S. (2011). A qualitative examination of factors related to the decrease in physical activity behavior in adolescent girls during the transition from primary to secondary school. *Journal of Physical Activity and Health*, 8(8), 1084-1091.
- Kooiman, T. J., de Groot, M., Hoogenberg, K., Krijnen, W. P., van der Schans, C. P., & Kooy, A. (2018). Self-tracking of physical activity in people with type 2 diabetes: A randomized controlled trial. *CIN: Computers, Informatics, Nursing*, 36(7), 340-349.
- Koring, M., Richert, J., Lippke, S., Parschau, L., Reuter, T., & Schwarzer, R. (2012). Synergistic effects of planning and self-efficacy on physical activity. *Health Education & Behavior*, 39(2), 152-158. <https://doi.org/10.1177/1090198111417621>

- Kosteli, M. C., Williams, S. E., & Cumming, J. (2016). Investigating the psychosocial determinants of physical activity in older adults: A qualitative approach. *Psychology & Health, 31*(6), 730-749.  
<https://doi.org/10.1080/08870446.2016.1143943>
- Lareau, A., & Shultz, J. J. (1996). *Journeys through ethnography: Realistic accounts of fieldwork*. Westview Press.
- Leisterer, S., & Jekauc, D. (2019). Students' emotional experience in physical education—A qualitative study for new theoretical insights. *Sports, 7*(10), 1-15.
- Lewis, K. (2014). Pupils' and teachers' experiences of school-based physical education: A qualitative study. *BMJ Open, 4*(9), 1-7.
- Linneberg, M. S., & Korsgaard, S. (2019). Coding qualitative data: A synthesis guiding the novice. *Qualitative Research Journal, 19*(3), 259-270.  
<https://doi.org/10.1108/QRJ-12-2018-0012>
- Lirgg, C. D., & Feltz, D. L. (1991). Teacher versus peer models revisited: Effects on motor performance and self-efficacy. *Research Quarterly for Exercise and Sport, 62*(2), 217-224.
- Lodewyk, K. R., & Muir, A. (2017). High school females' emotions, self-efficacy, and attributions during soccer and fitness testing in physical education. *Physical Educator, 74*(2), 269-295.
- Loprinzi, P. D., Davis, R. E., Fu, Y. C. (2015). Early motor skill competence as a mediator of child and adult physical activity. *Preventive Medicine Reports, 2*, 833-838.

- Lubans, D., Richards, J., Hillman, C., Faulkner, G., Beauchamp, M., Nilsson, M., Kelly, P., Smith, J., Raine, L., & Biddle, S. (2016). Physical activity for cognitive and mental health in youth: A systematic review of mechanisms. *Pediatrics, 138*(3), 1-15. <https://doi.org/10.1542/peds.2016-1642>
- Luszczynska, A., Cao, D. S., Mallach, N., Pietron, K., Mazurkiewicz, M., & Schwarzer, R. (2010). Intentions, planning, and self-efficacy predict physical activity in Chinese and Polish adolescents: Two moderated mediation analyses. *International Journal of Clinical and Health Psychology, 10*(2), 265-278. <https://scinapse.io/papers/2160100941>
- Manley, D., Cowan, P., Graff, C., Perlow, M., Rice, P., Richey, P., & Sanchez, Z. (2014). Self-efficacy, physical activity, and aerobic fitness in middle school children: Examination of a pedometer intervention program. *Journal of Pediatric Nursing, 29*(3), 228-237. <https://doi.org/10.1016/j.pedn.2013.10.011>
- Martin, L. J., Burke, S. M., Shapiro, S., Carron, A. V., Irwin, J. D., Petrella, R., ... & Shoemaker, K. (2009). The use of group dynamics strategies to enhance cohesion in a lifestyle intervention program for obese children. *BMC Public Health, 9*(1), 1-11.
- McAuley, E., & Mihalko, S. L. (1998). Measuring exercise-related self-efficacy. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 371-390). Morgantown, WV: Fitness Information Technology.
- Mears, D. (2008). Curriculum diversity and young adult physical activity: Reflections from high school physical education. *Physical Educator, 65*(4), 195-207.

- Mendoza-Vasconez, A. S., Marquez, B., Benitez, T. J., & Marcus, B. H. (2018). Psychometrics of the self-efficacy for physical activity scale among a Latina women sample. *BMC Public Health, 18*(1), 1097. <https://doi.org/10.1186/s12889-018-5998-0>
- Metcalfe, B. S., Hosking, J., Jeffery, A. N., Henley, W. E., & Wilkin, T. (2015). Exploring the adolescent fall in physical activity: a 10-yr cohort study (EarlyBird 41). *Medicine and Science in Sports and Exercise, 47*(10), 2084-2092. <https://doi.org/10.1249/MSS.0000000000000644>
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. Jossey-Bass.
- Michie, S., Abraham, C., Whittington, C., McAteer, J., & Gupta, S. (2009). Effective techniques in healthy eating and physical activity interventions: A meta-regression. *Health Psychology, 28*(6), 690-701.
- Moola, F., Faulkner, G. E., Kirsh, J. A., & Kilburn, J. (2008). Physical activity and sport participation in youth with congenital heart disease: Perceptions of children and parents. *Adapted Physical Activity Quarterly, 25*(1), 49-70. <https://doi.org/10.1123/apaq.25.1.49>
- Moritz, S. E., Feltz, D. L., Fahrback, K. R., & Mack, D. E. (2000). The relation of self-efficacy measures to sport performance: A meta-analytic review. *Research Quarterly for Exercise and Sport, 71*(3), 280-294. <https://doi.org/10.1080/02701367.2000.10608908>
- Motl, R. W., Dishman, R. K., Ward, D. S., Saunders, R. P., Dowda, M., Felton, G., & Pate, R. R. (2005). Comparison of barriers self-efficacy and perceived behavioral

control for explaining physical activity across 1 year among adolescent girls.  
*Health Psychology, 24(1)*, 106.

Murray M. & Tenenbaum G. (2010) Computerized pedagogical agents as an educational means for developing physical self-efficacy and encouraging activity in youth.  
*Journal of Educational Computing Research 42(3)*, 267–283.  
<https://doi.org/10.2190/EC.42.3.b>

Neumark-Sztainer, D., Story, M., Hanna, P. J., Tharp, T., & Rex, J. (2003). Factors associated with changes in physical activity: A cohort study of inactive adolescent girls. *Archives of Pediatrics & Adolescent Medicine, 157(8)*, 803-810.  
<https://doi.org/10.1001/archpedi.157.8.803>

Nock, N. L., Ievers-Landis, C. E., Dajani, R., Knight, D., Rigda, A., Narasimhan, S., & Uli, N. (2016). Physical activity self-efficacy and fitness: Family environment relationship correlates and self-esteem as a mediator among adolescents who are overweight or obese. *Childhood Obesity, 12(5)*, 360-367.  
<https://doi.org/10.1089/chi.2016.0007>

Olander, E. K., Fletcher, H., Williams, S., Atkinson, L., Turner, A., & French, D. P. (2013). What are the most effective techniques in changing obese individuals' physical activity self-efficacy and behaviour: a systematic review and meta-analysis. *International Journal of Behavioral Nutrition and Physical Activity, 10(29)*, 1-15. <https://doi.org/10.1186/1479-5868-10-29>

Owen, K. B., Smith, J., Lubans, D. R., Ng, J. Y., & Lonsdale, C. (2014). Self-determined motivation and physical activity in children and adolescents: A systematic review



and meta-analysis. *Preventive Medicine*, 67, 270-279.

<https://doi.org/10.1016/j.ypmed.2014.07.033>

Pajares, F. (2006). Self-efficacy beliefs during adolescence: Implications for teachers and parents. In F. Pajares & T. Urdan (Eds.), *Adolescence and education, Vol. 5: Self-efficacy beliefs of adolescents* (pp. 339-367). Greenwich, CT: Information Age Publishing.

Pangrazi, R. P., Beighle, A., & Sidman, C. L. (2007). *Pedometer power: Using pedometers in school and community*. Champaign, IL: Human Kinetics.

Partridge, J. A., King, K. M., & Ban, W. (2011). Perceptions of heart rate monitor use in high school physical education classes. *Physical Educator* 68(1), 30-43.

Patton M. Q. (1980). *Qualitative evaluation methods*. Sage.

Patton, M. (2002). *Qualitative research & evaluation methods* (3rd ed.). Sage.

Perlman, D. & Webster, C. A. (2011). Supporting Student Autonomy in Physical Education. *Journal of Physical Education, Recreation & Dance*, 82(5), 46-49.

Peterson, M. S., Lawman, H. G., Wilson, D. K., Fairchild, A., & Van Horn, M. L. (2013). The association of self-efficacy and parent social support on physical activity in male and female adolescents. *Health Psychology*, 32(6), 666-674.

<https://doi.org/10.1037/a0029129>

Pittman, A. F. (2020). Effect of a school-based activity tracker, companion social website, and text messaging intervention on exercise, fitness, and physical activity self-efficacy of middle school students. *The Journal of School Nursing*, 36(2), 112-120. <https://doi.org/10.1177/1059840518791223>

- Powell, E., Woodfield, L. A., & Nevill, A. M. (2016). Increasing physical activity levels in primary school physical education: The SHARP Principles Model. *Preventive Medicine Reports, 3*, 7-13.
- Power, T. G., Bindler, R. C., Goetz, S., & Daratha, K. B. (2010). Obesity prevention in early adolescence: Student, parent, and teacher views. *Journal of School Health, 80*(1), 13-19.
- Reeve, J. (2006). Teachers as facilitators: What autonomy-supportive teachers do and why their students benefit. *The Elementary School Journal, 106*(3), 225-236.
- Ridgers, N. D., Fazez, D. M., & Fairclough, S. J. (2007). Perceptions of athletic competence and fear of negative evaluation during physical education. *British Journal of Educational Psychology, 77*(2), 339-349.
- Robbins, L. B., Talley, H. C., Wu, T. Y., & Wilbur, J. (2010). Sixth-grade boys' perceived benefits of and barriers to physical activity and suggestions for increasing physical activity. *The Journal of School Nursing, 26*(1), 65-77.  
<https://doi.org/10.1177/1059840509351020>
- Robinson, L. E., Stodden, D. F., Barnett, L. M., Lopes, V. P., Logan, S. W., Rodrigues, L. P., & D'Hondt, E. (2015). Motor competence and its effect on positive developmental trajectories of health. *Sports Medicine, 45*(9), 1273-1284.  
<https://doi.org/10.1007/s40279-015-0351-6>
- Ross, S. E. T., Dowda, M., Beets, M. W., & Pate, R. R. (2013). Physical activity behavior and related characteristics of highly active eighth-grade girls. *Journal of Adolescent Health, 52*(6), 745-751.  
<https://doi.org/10.1016/j.jadohealth.2012.12.003>

- Ryan, G. J., & Dzewaltowski, D. A. (2002). Comparing the relationships between different types of self-efficacy and physical activity in youth. *Health Education & Behavior, 29*(4), 491-504. <https://doi.org/10.1177/109019810202900408>
- Sallis, J. (2000). Age-related decline in physical activity: A synthesis of human and animal studies. *Medicine and Science in Sports and Exercise, 32*, 1598-1600. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.452.8252&rep=rep1&type=pdf>
- Sallis, J. F., & McKenzie, T. L. (1991). Physical education's role in public health. *Research Quarterly for Exercise and Sport, 62*(2), 124-137. <https://doi.org/10.1080/02701367.1991.10608701>
- Sallis, J. F., Mackenzie, T. L., Beets, M. W., Beighle, A., Erwin, H., & Lee, S. (2012). Physical education's role in public health: Steps forward and backward over 20 years and HOPE for the future. *Research Quarterly for Exercise and Sport, 83*(2), 125-135. <https://doi.org/10.1080/02701367.2012.10599842>
- Saunders, R. P., Pate, R. R., Felton, G., Dowda, M., Weinrich, M. C., Ward, D. S., Parsons, M. A., & Baranowski, T. (1997). Development of questionnaires to measure psychosocial influences on children's physical activity. *Preventive Medicine, 26*(2), 241-247. <https://doi.org/10.1006/pmed.1996.0134>
- Saville, P. D., Bray, S. R., Ginis, K. A. M., Cairney, J., Marinoff-Shupe, D., & Pettit, A. (2014). Sources of self-efficacy and coach/instructor behaviors underlying relation-inferred self-efficacy (RISE) in recreational youth sport. *Journal of Sport and Exercise Psychology, 36*(2), 146-156.

- Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology, 60*, 1-10.
- Schwarzer, R., & Renner, B. (2009). Health-specific self-efficacy scales. *Freie Universität Berlin, 14*, 1-21. <https://userpage.fu-berlin.de/~health/healself.pdf>
- SHAPE America. (2013). *Grade-level outcomes for K-12 physical education*.  
<https://www.shapeamerica.org/standards/pe/upload/Grade-Level-Outcomes-for-K-12-Physical-Education.pdf>
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*, 63–75. <https://doi.org/10.3233/EFI-2004-22201>
- Silva, P., Lott, R., Wickrama, K. A.S., Mota J. & Welk G. (2012). Psychosocial correlates of physical activity in two cultural contexts: Different pathways? *Journal of Physical Activity & Health 9*(4), 1–44.  
<https://doi.org/10.1249/01.mss.0000185657.86065.98>
- Singh, A., Uijtdewilligen, L., Twisk, J. W., Van Mechelen, W., & Chinapaw, M. J. (2012). Physical activity and performance at school: A systematic review of the literature including a methodological quality assessment. *Archives of Pediatrics & Adolescent Medicine, 166*(1), 49-55.  
<https://dx.doi.org/10.1001/archpediatrics.2011.716>
- Small, M. L. (2009). “How many cases do I need?” On science and the logic of case selection in field-based research. *Ethnography, 10*(1), 5-38.  
<https://doi.org/10.1177/1466138108099586>

- Smith, A. L. (1999). Perceptions of peer relationships and physical activity participation in early adolescence. *Journal of Sport and Exercise Psychology, 21*(4), 329-350. <https://doi.org/10.1123/jsep.21.4.329>
- Spence, J. C., Blanchard, C. M., Clark, M., Plotnikoff, R. C., Storey, K. E., & McCargar, L. (2010). The role of self-efficacy in explaining gender differences in physical activity among adolescents: A multilevel analysis. *Journal of Physical Activity and Health, 7*(2), 176-183.
- Standage, M., Duda, J. L., & Ntoumanis, N. (2003). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal theories to predict physical activity intentions. *Journal of Educational Psychology, 95*(1), 97. <http://doi.org/10.1037//0022-0663.95.1.97>
- Taylor, I. (2017). Reciprocal effects of motivation in physical education and self-reported physical activity. *Psychology of Sport and Exercise, 31*, 131-138. <https://doi.org/10.1016/j.psychsport.2017.01.003>
- Taylor, I. M., Spray, C. M., & Pearson, N. (2014). The influence of the physical education environment on children's well-being and physical activity across the transition from primary to secondary school. *Journal of Sport and Exercise Psychology, 36*(6), 574-583. <https://doi.org/10.1123/jsep.2014-0038>
- Taymoori, P., Rhodes, R. E., & Berry, T. R. (2010). Application of a social cognitive model in explaining physical activity in Iranian female adolescents. *Health Education Research, 25*(2), 257-267. <https://doi.org/10.1093/her/cyn051>
- Teerarungsikul, N., Phuphaibul, R., Loveland-Cherry, C. J., Pookboonmee, R., Kijboonchoo, K., & Nityasuddhi, D. (2009). Effectiveness of a physical activity

promotion program on perceived self-efficacy, physical activity and physical fitness among Thai adolescent girls. *Pacific Rim International Journal of Nursing Research*, 13(2), 81-94.

<https://pdfs.semanticscholar.org/f967/8e25988a638aa5fa0e8d04ffadbba519bcd2.pdf>

Todd, T., Reid, G., & Butler-Kisber, L. (2010). Cycling for students with ASD: Self-regulation promotes sustained physical activity. *Adapted Physical Activity Quarterly*, 27(3), 226-241. <https://doi.org/10.1123/apaq.27.3.226>

Tracy, S. J. (2012). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. John Wiley & Sons.

Tracy, S. J. (2019). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. John Wiley & Sons.

Troiano, R. P., Berrigan, D., Dodd, K. W., Masse, L. C., Tilert, T., & McDowell, M. (2008). Physical activity in the United States measured by accelerometer. *Medicine & Science in Sports & Exercise*, 40(1), 181-188. <https://doi.org/10.1249/mss.0b013e31815a51b3>

Trost, S. G., Pate, R. R., Ward, D. S., Saunders, R., & Riner, W. (1999). Correlates of objectively measured physical activity in preadolescent youth. *American Journal of Preventive Medicine*, 17(2), 120-126. [http://dx.doi.org/10.1016/s0749-3797\(99\)00056-2](http://dx.doi.org/10.1016/s0749-3797(99)00056-2)

Tudor, K., Sarkar, M., & Spray, C. (2019). Exploring common stressors in physical education: A qualitative study. *European Physical Education Review*, 25(3), 675-690.

- United States Department of Health and Human Services. (2020). *Real-life benefits of exercise and physical activity*. <https://www.nia.nih.gov/health/real-life-benefits-exercise-and-physical-activity>
- Usher, E. L. (2009). Sources of middle school students' self-efficacy in mathematics: A qualitative investigation. *American Educational Research Journal*, 46(1), 275-314.
- Usher, E. L. (2015). Personal capability beliefs. In L. Corno & E. H. Anderman (Eds.), *Handbook of educational psychology* (3rd ed., pp. 146-159). New York, NY: Taylor & Francis
- Usher, E. L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. *Review of Educational Research*, 78(4), 751-796. <https://doi.org/10.3102/0034654308321456>
- Vallano, J. P., & Compo, N. S. (2011). A comfortable witness is a good witness: Rapport-building and susceptibility to misinformation in an investigative mock-crime interview. *Applied Cognitive Psychology*, 25(6), 960–970. <https://doi.org/10.1002/acp.1789>
- Van der Horst, K., Paw, M. J., Twisk, J. W., & Van Mechelen, W. (2007). A brief review on correlates of physical activity and sedentariness in youth. *Medicine & Science in Sports & Exercise*, 39(8), 1241-1250. <https://dx.doi.org/10.1249/mss.0b013e318059bf35>
- Vargas-Tonsing, T. M., Myers, N. D., & Feltz, D. L. (2004). Coaches' and athletes' perceptions of efficacy-enhancing techniques. *The Sport Psychologist*, 18(4), 397-414.

- Voorhees, C. C., Yan, A. F., Clifton, K. J., & Wang, M. Q. (2011). Neighborhood environment, self-efficacy, and physical activity in urban adolescents. *American Journal of Health Behavior, 35*(6), 674-688. <https://doi.org/10.5993/ajhb.35.6.4>
- Voskuil, V. R., & Robbins, L. B. (2015). Youth physical activity self-efficacy: A concept analysis. *Journal of Advanced Nursing 71*(9), 2002–2019. <https://doi.org/10.1111/jan.12658>
- Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal, 174*(6), 801-809. <http://dx.doi.org/10.1503/cmaj.051351>
- Warner, L. M., Schütz, B., Wolff, J. K., Parschau, L., Wurm, S., & Schwarzer, R. (2014, April 7). Sources of self-efficacy for physical activity. *Health Psychology*. Advance online publication. <http://dx.doi.org/10.1037/hea0000085>
- Weiss, M. R. (2013). Back to the future: Research trends in youth motivation and physical activity. *Pediatric Exercise Science, 25*(4), 561-572. <https://doi.org/10.1123/pes.25.4.561>
- Weiss, M. R., Amorose, A. J., & Kipp, L. E. (2012). Youth motivation and participation in sport and physical activity. In R. M. Ryan (Ed.), *The Oxford handbook of human motivation* (pp. 520-553). New York, NY: Oxford University Press.
- Welk, G. J. (1999). Promoting physical activity in children: Parental influences. *ERIC Digest*. <http://www.eric.ed.gov/PDFS/ED436480.pdf>
- Wells, C. M., Collins, D., & Hale, B. D. (1993). The self-efficacy-performance link in maximum strength performance. *Journal of Sports Sciences, 11*(2), 167-175. <https://doi.org/10.1080/02640419308729980>



- Whitehead, S., & Biddle, S. (2008). Adolescent girls' perceptions of physical activity: A focus group study. *European physical education review, 14*(2), 243-262.  
<https://doi.org/10.1177/1356336X08090708>
- Williams, S. L., & French, D. P. (2011). What are the most effective intervention techniques for changing physical activity self-efficacy and physical activity behaviour—and are they the same? *Health Education Research, 26*(2), 308-322.  
<https://dx.doi.org/10.1093/her/cyr005>
- Wiseman, T. (1996). A concept analysis of empathy. *Journal of Advanced Nursing, 23*(6), 1162-1167.
- Zeldin, A. L., & Pajares, F. (2000). Against the odds: Self-efficacy beliefs of women in mathematical, scientific, and technological careers. *American Educational Research Journal, 37*, 215–246. <https://doi.org/10.2307/1163477>

## VITA

### **Education**

2012 American College of Education

Indianapolis, IN

Master of Education-Curriculum and Instruction

2008 Western Illinois University

Macomb, IL

Bachelor of Science in Kinesiology-Physical Education/Teacher Education

Health Education Endorsement

### **Teaching Experience**

2018-Present University of Kentucky

Lexington, KY

Teaching Assistant, Physical Education

2016-2018 Emporia State University

Emporia, KS

Instructor, Physical Education

2015-2016 Benedictine University

Lisle,

IL

Adjunct Professor, Physical Education

2015-2016 Chicago Public Schools

Chicago, IL

Health Teacher, Moos Elementary School

2013-2015 Balsz School District

Phoenix, AZ

Physical Education Teacher, Brunson-Lee Elementary

2008-2013 Chicago Public Schools

Chicago, IL

Physical Education Teacher, Owen Scholastic Academy and Wacker Elementary

### **Publications**

#### Manuscripts

Manley, J., Murfay, K., Beighle, A., & Erwin, H. (in revision). Authentic learning through PEAK conditions in secondary physical education. *Journal of Physical Education, Recreation & Dance*. Article accepted with revisions on January 27, 2020.

Murfay, K., Beighle, A., & Erwin, H. (2021). Motivating high school students with PRAISE. *Journal of Physical Education, Recreation & Dance*, 92(1), 27-35.

#### Book Chapters

Dudley, D., Beighle, A., Erwin, H. E., Cairney, J., Schaefer, L., & Murfay, K. (2020). Physical education-based physical activity interventions. In T. Brusseau, S. Fairclough, &

D. Lubans (Eds.) *The Routledge Handbook of Youth Physical Activity*. (pp. 489-503).

Routledge.